

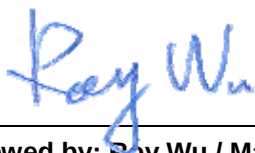
FCC Test Report

EQUIPMENT : Bar Code Handy Terminal
BRAND NAME : DENSO
MODEL NAME : BHT-710BWB-CE
FCC ID : PZWBHT710BWB
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)
APPLICANT : DENSO WAVE INCORPORATED

1-1 Showa-cho, Kariya-shi, Aichi, Japan 448-8661

The product sample received on Jan. 21, 2009 and completely tested on Feb. 13, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Roy Wu / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR912101A	Rev. 01	Initial issue of report	Feb. 20, 2009
FR912101A	Rev. 02	Update applicant address	Feb. 23, 2009
FR912101A	Rev. 03	Update test mode of conducted emission	Mar. 27, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 13.9 dB at 0.534 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.43 dB at 2483.50 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

DENSO WAVE INCORPORATED

1-1 Showa-cho, Kariya-shi, Aichi, Japan 448-8661

1.2 Manufacturer

Universal Scientific Industrial CO., LTD.

No. 141, Lane 351, Taiping Road, Sec. 1, Tsao Tuen, Nan-Tou, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Bar Code Handy Terminal
Brand Name	DENSO
Model Name	BHT-710BWB-CE
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	$2412+(n-1)*5$ MHz; $n=1\sim11$
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 17.50 dBm 802.11g : 16.68 dBm
Antenna Type	PIFA Antenna with gain 3.21 dBi
Type of Antenna Connector	I-PEX
HW Version	V3.4
SW Version	1.16a
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Accessories List:

Accessories Specification		
Battery 1	Brand Name	DENSO
	Model Name	BT-700LL
	Power Rating	3.6Vdc, 3800mAh
	Type	Li-ion
Battery 2	Brand Name	DENSO
	Model Name	BT-700L
	Power Rating	3.7Vdc, 2200mAh
	Type	Li-ion

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. For accessories equipped with this EUT, please refer to the appendix of the external photo.
4. For other wireless features of this EUT, test report will be issued separately.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	TW1022/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 7

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DWL-7100AP	KA22003040018-1	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Cellink	BTHS-6025-F	PQY-4710874200357	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and recorded the RF power output in the following table:

802.11b

2.4GHz 802.11b RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	17.89	17.57	17.43	17.76
CH 06	2437 MHz	17.60	17.38	17.38	16.67
CH 11	2462 MHz	17.60	17.45	17.80	17.78

802.11g

2.4GHz 802.11g RF Power (dBm)									
Channel	Frequency (MHz)	Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	15.17	15.17	15.05	15.14	15.00	14.82	14.98	13.77
CH 06	2437 MHz	15.12	15.03	15.42	15.40	15.26	15.27	15.32	13.82
CH 11	2462 MHz	15.63	15.59	15.60	15.63	15.41	15.33	15.37	14.40

Remark:

1. The pre-scanned RF power table was measured by power meter.
2. The 802.11b data rates were set in 1 Mbps and 802.11g data rates were set in 6 Mbps for all the test cases, due to the highest RF output power.
3. The EUT is programmed to transmit signal continuously for all testing.

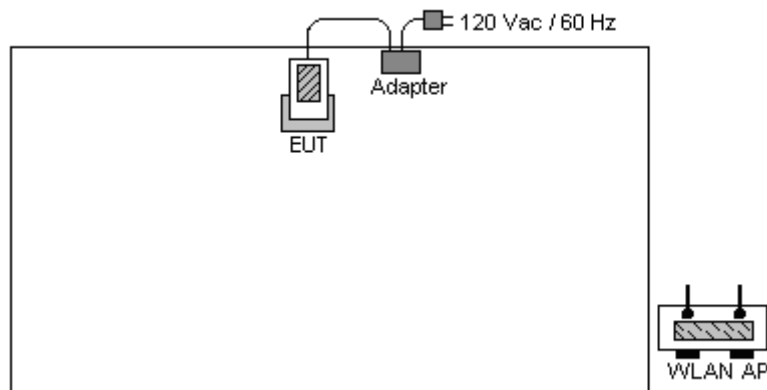
2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

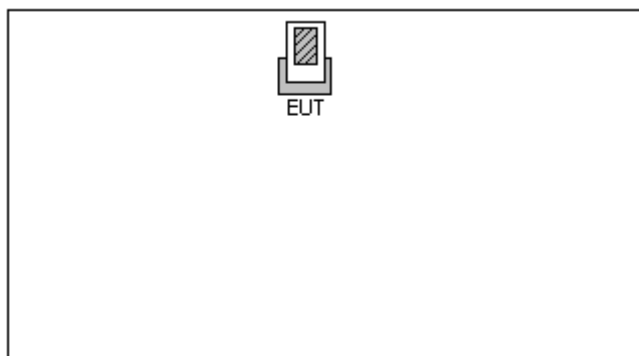
Test Cases		
Test Item	802.11b Modulation : DSSS	802.11g Modulation : OFDM
Conducted TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
Radiated TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
AC Conducted Emission	■ Mode 1 : WLAN Link (2.4G) + Cradle + Adapter	

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

Programmed RF Utility, "FCCTest18dBm.exe", is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

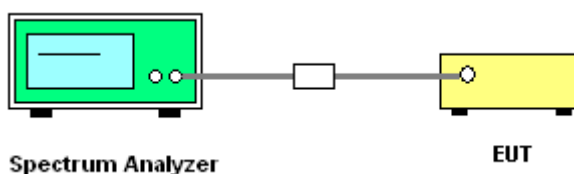
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz.
In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.08	0.5	Pass
06	2437	10.08	0.5	Pass
11	2462	10.08	0.5	Pass

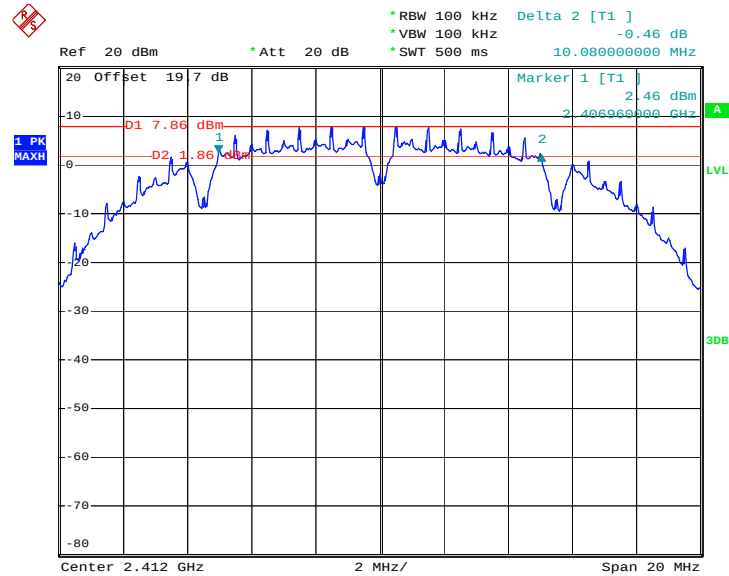
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.36	0.5	Pass



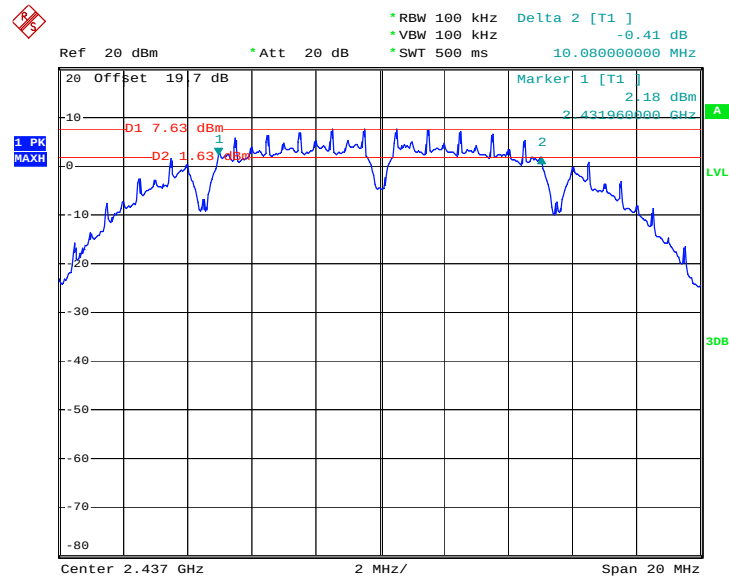
3.1.6 Test Result of 6dB Bandwidth Plots

Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 12.FEB.2009 17:10:32

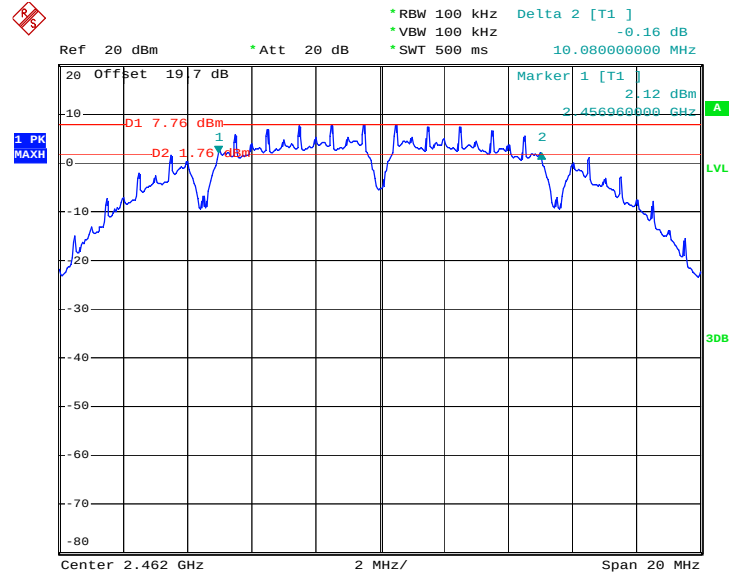
Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 12.FEB.2009 17:11:42

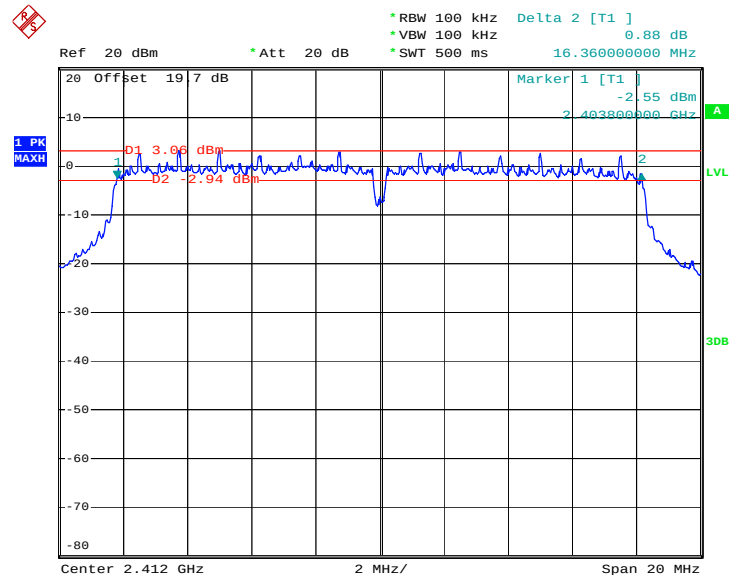


Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



Date: 12.FEB.2009 17:13:18

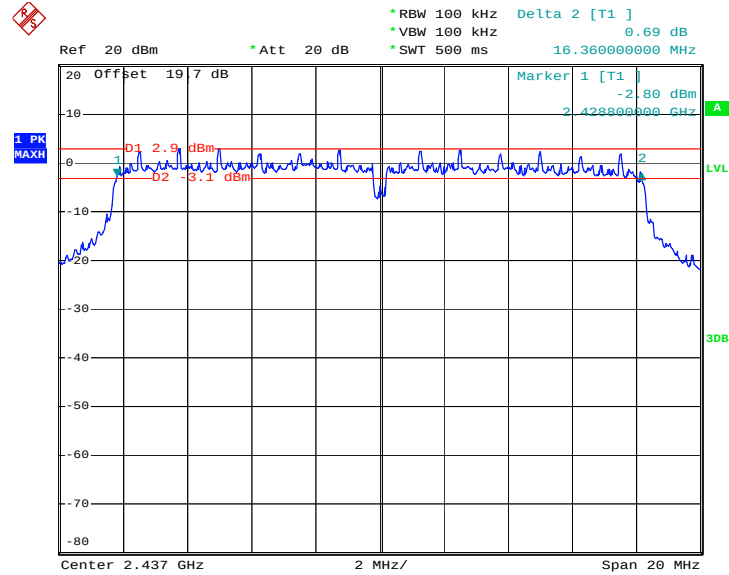
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 12.FEB.2009 17:17:10

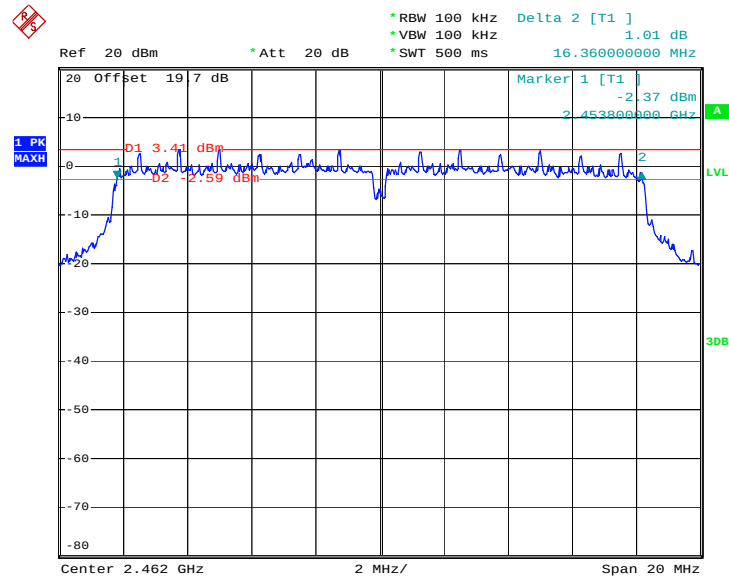


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 12.FEB.2009 17:16:01

Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



Date: 12.FEB.2009 17:14:37

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

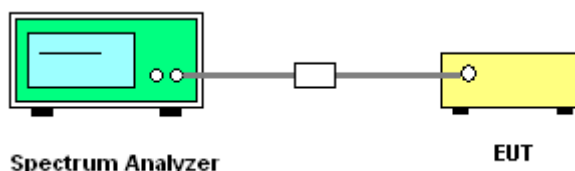
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Measure the power by spectrum analyzer.

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.34	30	Pass
06	2437	17.17	30	Pass
11	2462	17.50	30	Pass

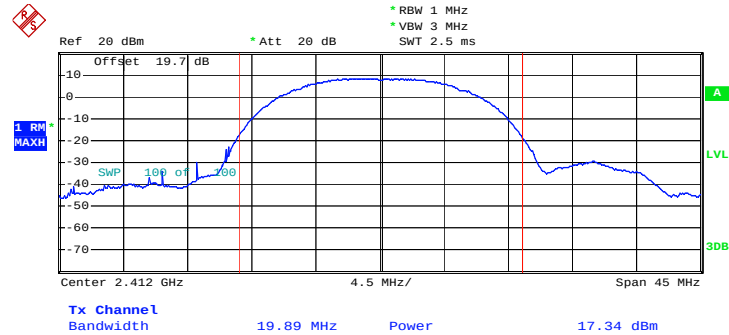
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.23	30	Pass
06	2437	16.33	30	Pass
11	2462	16.68	30	Pass



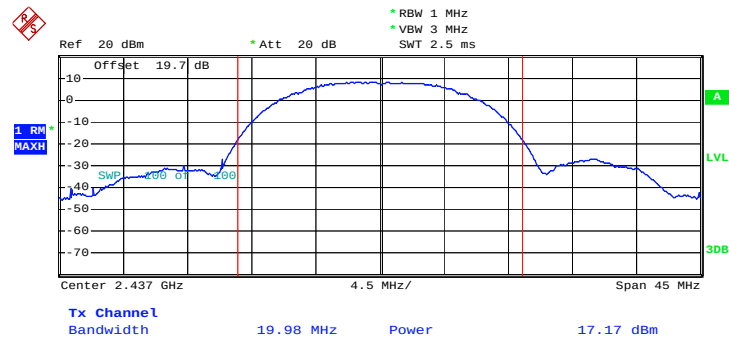
3.2.6 Test Result of Output Power Plots

Mode 1 : Output Power Plot on 802.11b Channel 01



Date: 19.FEB.2009 09:53:11

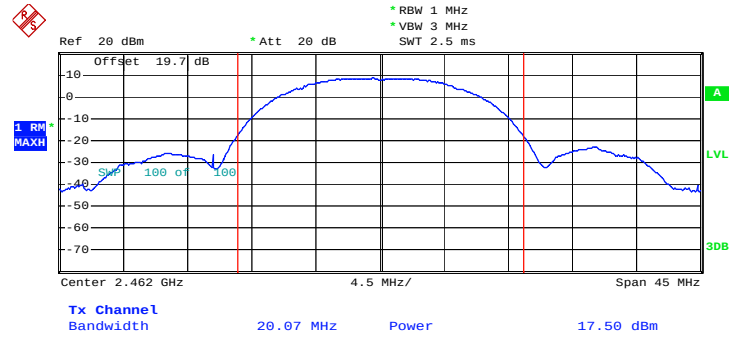
Mode 2 : Output Power Plot on 802.11b Channel 06



Date: 19.FEB.2009 09:53:27

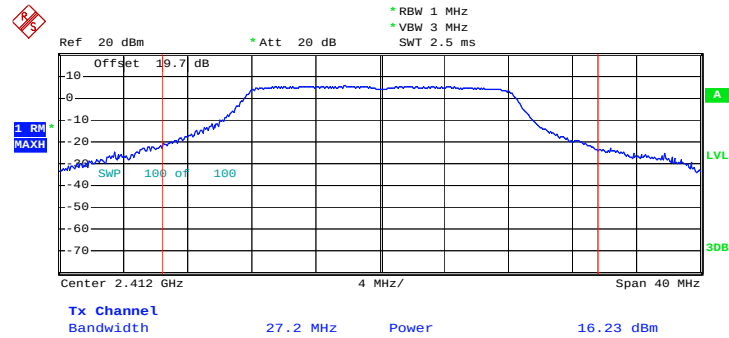


Mode 3 : Output Power Plot on 802.11b Channel 11



Date: 19.FEB.2009 09:53:40

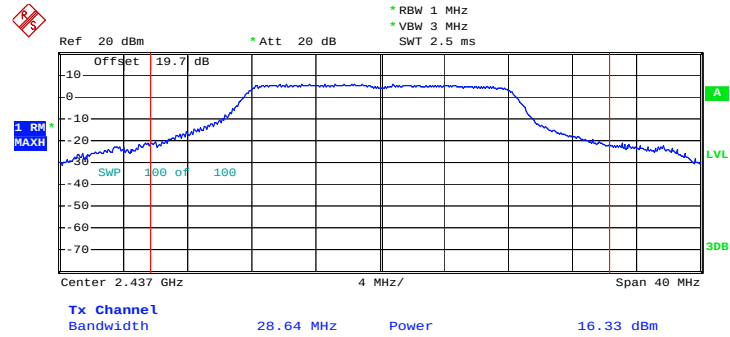
Mode 4 : Output Power Plot on 802.11g Channel 01



Date: 12.FEB.2009 19:16:27

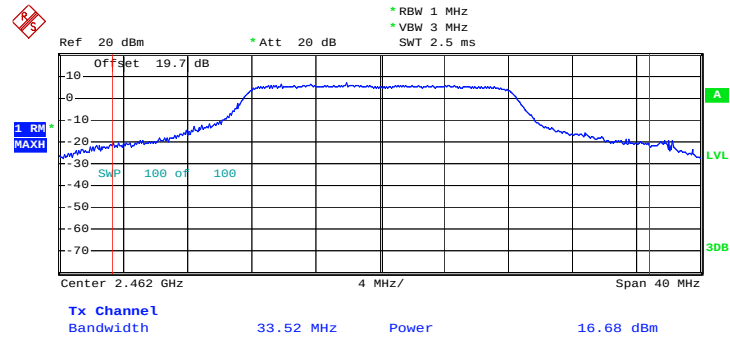


Mode 5 : Output Power Plot on 802.11g Channel 06



Date: 12.FEB.2009 19:17:25

Mode 6 : Output Power Plot on 802.11g Channel 11



Date: 12.FEB.2009 19:18:06

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

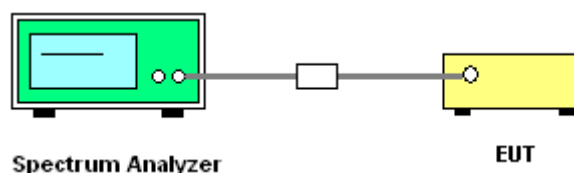
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Elvis Chen

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	63.65	-10.35	74	61.55	32.32	5.46	35.68	112	35	Peak
2389.99	48.64	-5.36	54	46.54	32.32	5.46	35.68	112	35	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	52.00	-22.00	74	49.92	32.30	5.46	35.68	100	45	Peak
2389.99	38.04	-15.96	54	35.96	32.30	5.46	35.68	100	45	Average

Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Elvis Chen

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	62.17	-11.83	74	60.18	32.30	5.38	35.69	107	27	Peak
2483.5	44.52	-9.48	54	42.53	32.30	5.38	35.69	107	27	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	51.35	-22.65	74	49.36	32.30	5.38	35.69	117	306	Peak
2483.5	37.97	-16.03	54	35.98	32.30	5.38	35.69	117	306	Average



Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Elvis Chen

802.11g Channel 01										
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	66.98	-7.02	74	64.87	32.32	5.46	35.67	134	24	Peak
2388.85	47.64	-6.36	54	45.53	32.32	5.46	35.67	134	24	Average

802.11b Channel 01										
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	57.19	-16.81	74	55.10	32.30	5.46	35.67	100	45	Peak
2388.85	39.81	-14.19	54	37.72	32.30	5.46	35.67	100	45	Average

Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Elvis Chen

802.11g Channel 11										
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	72.35	-1.65	74	70.36	32.30	5.38	35.69	136	37	Peak
2483.5	52.57	-1.43	54	50.58	32.30	5.38	35.69	136	37	Average

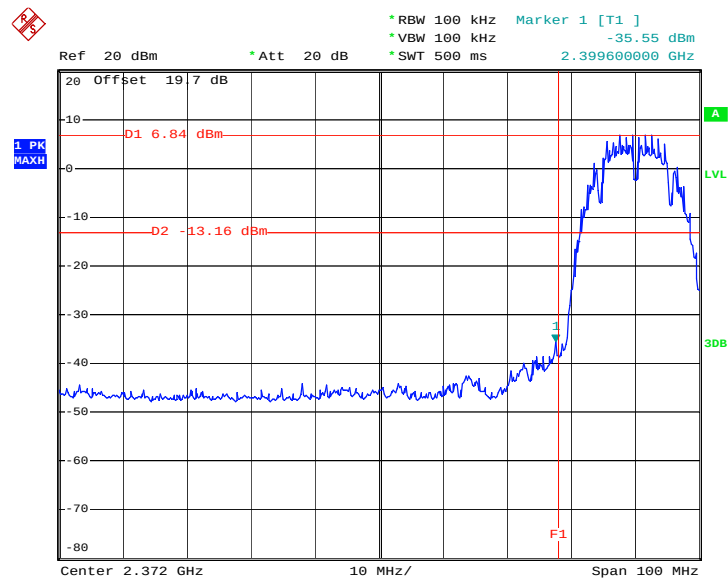
802.11b Channel 11										
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	58.11	-15.89	74	56.12	32.30	5.38	35.69	117	307	Peak
2483.5	39.77	-14.23	54	37.78	32.30	5.38	35.69	117	307	Average



3.3.6 Test Result of Conducted Band Edges

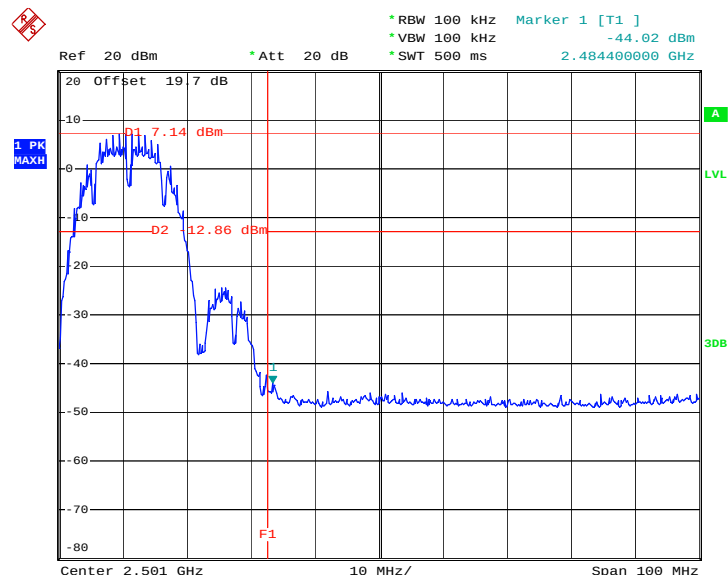
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	47~49%
Test Channel :	01 and 11	Test Engineer :	Eric Hum

Low Band Edge Plot on 802.11b Channel 01



Date: 12.FEB.2009 17:29:25

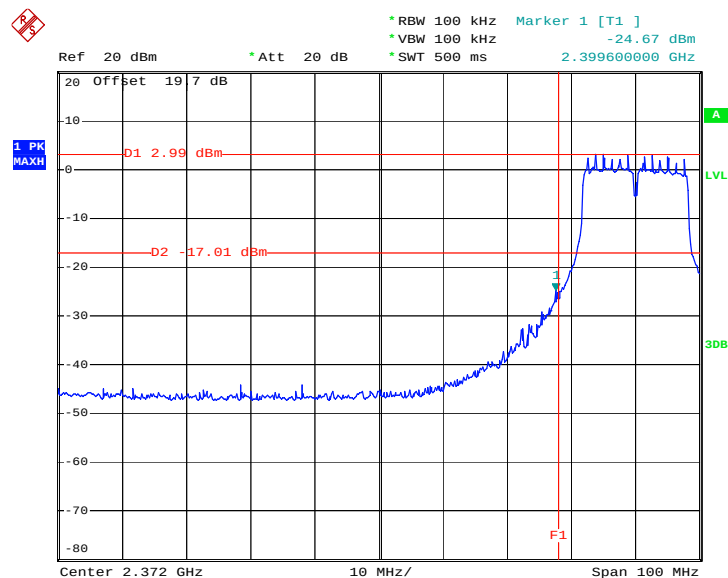
High Band Edge Plot on 802.11b Channel 11



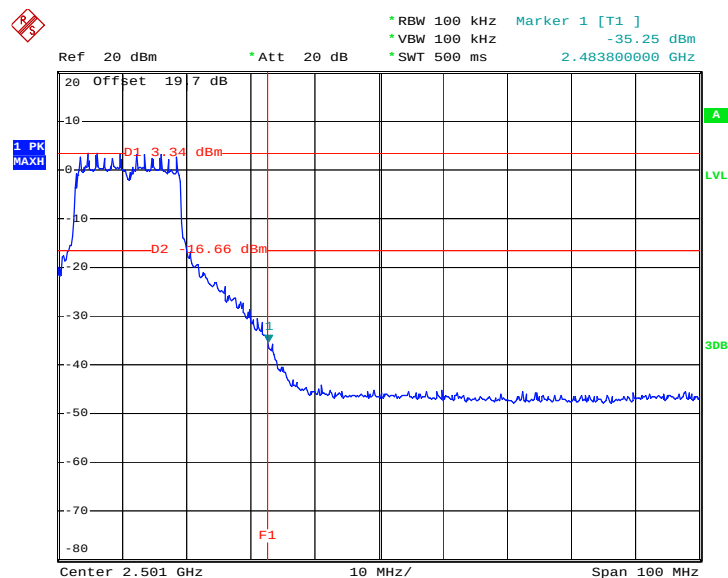
Date: 12.FEB.2009 17:27:51



Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	47~49%
Test Channel :	01 and 11	Test Engineer :	Eric Hum

Low Band Edge Plot on 802.11g Channel 01

Date: 12.FEB.2009 17:18:32

High Band Edge Plot on 802.11g Channel 11

Date: 12.FEB.2009 17:26:29

3.4 Power Spectral Density Measurement

3.4.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

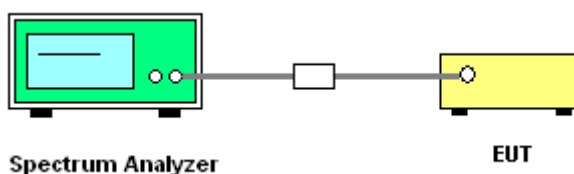
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

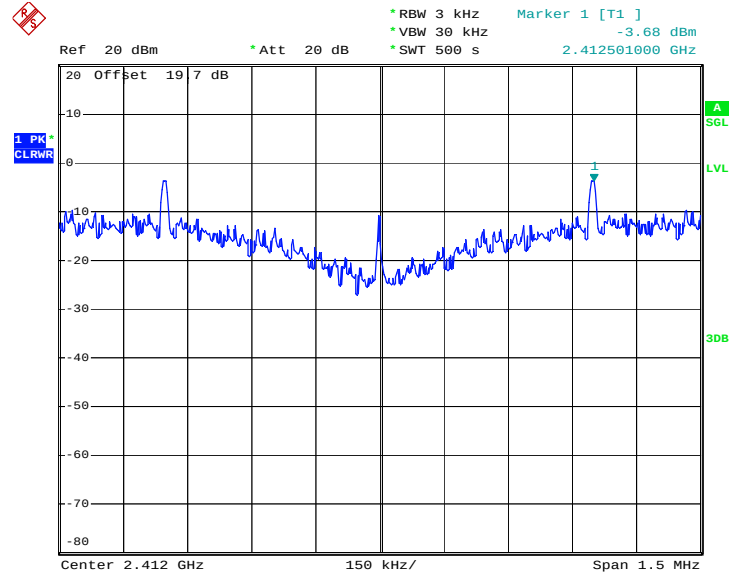
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.68	8	Pass
06	2437	-4.04	8	Pass
11	2462	-3.74	8	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Eric Hum	Relative Humidity :	47~49%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.67	8	Pass
06	2437	-9.02	8	Pass
11	2462	-3.13	8	Pass

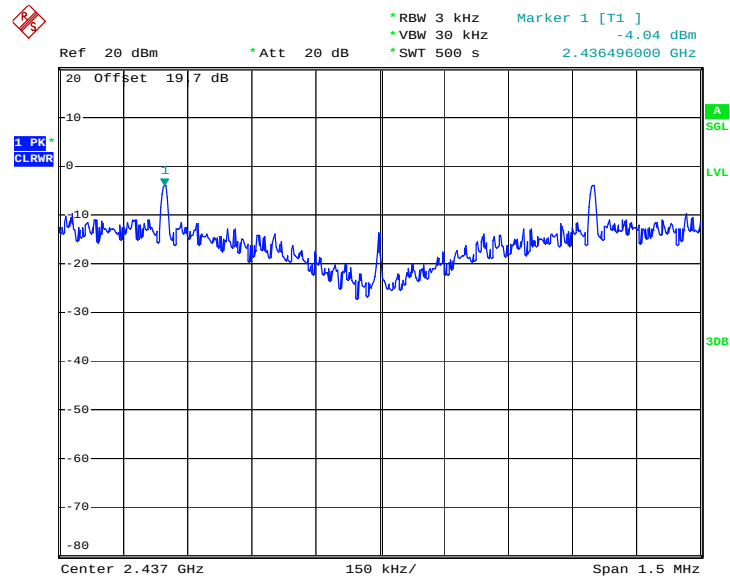
3.4.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11b Channel 01



Date: 12.FEB.2009 17:52:31

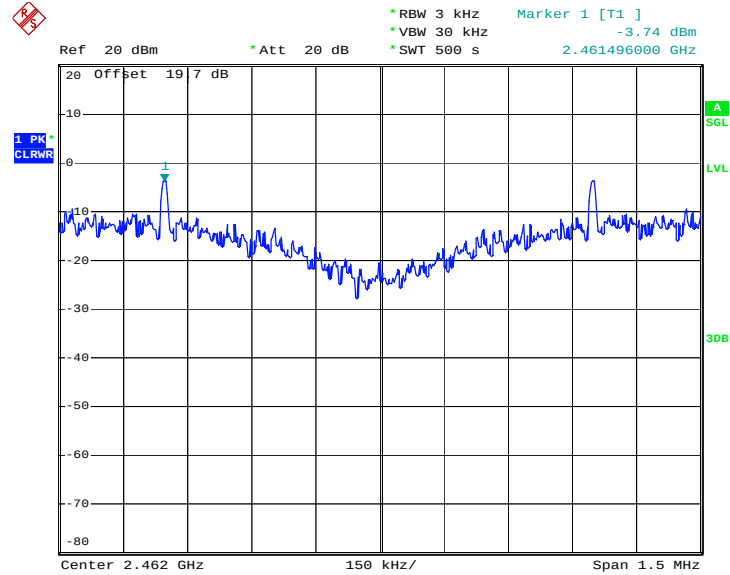
Mode 2 : PSD Plot on 802.11b Channel 06



Date: 12.FEB.2009 18:17:33

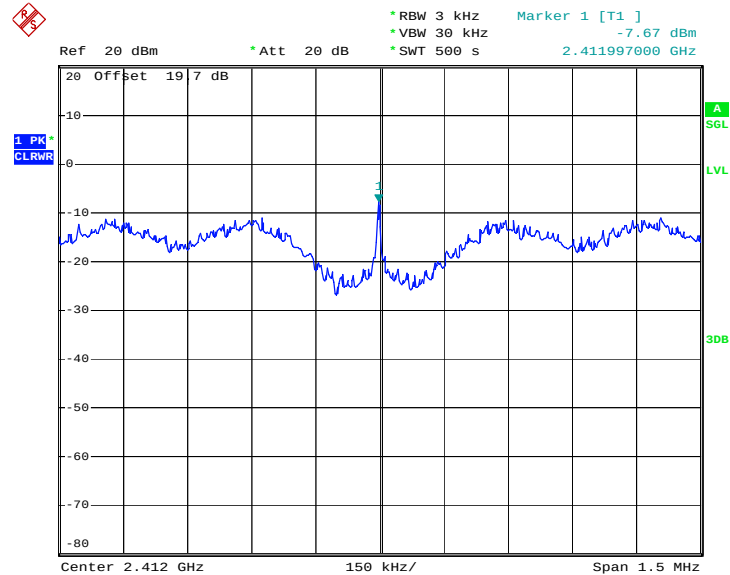


Mode 3 : PSD Plot on 802.11b Channel 11



Date: 12.FEB.2009 18:26:24

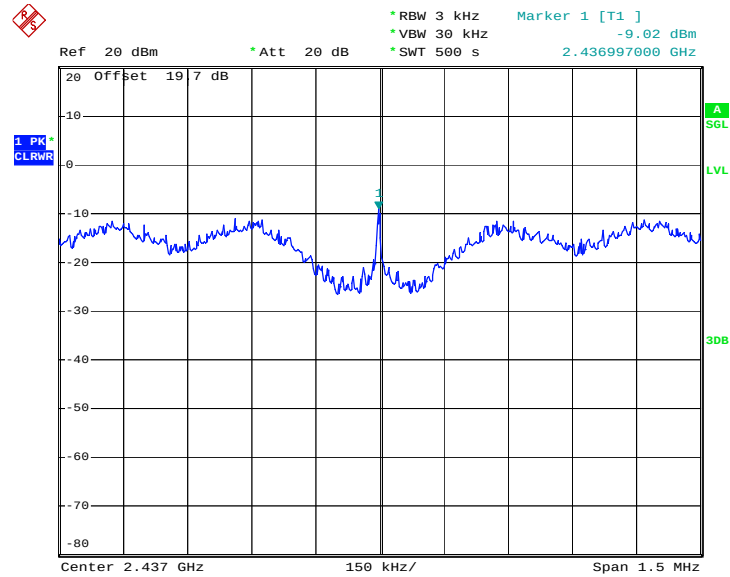
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 12.FEB.2009 18:36:55

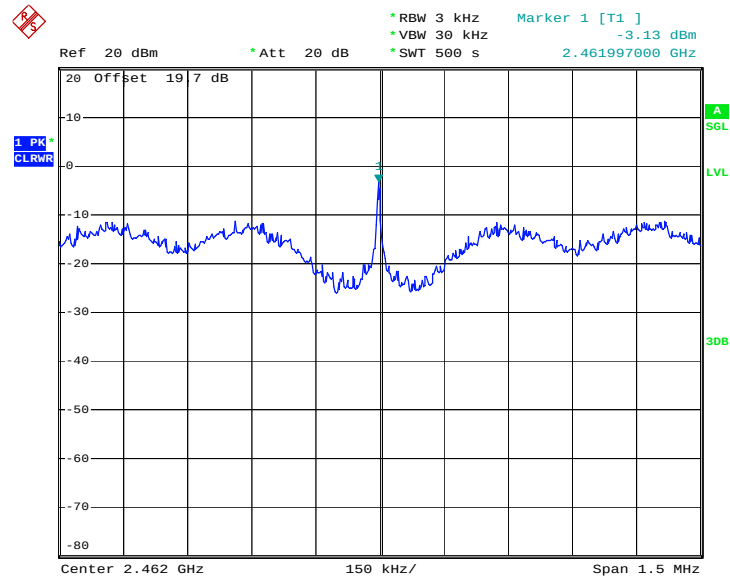


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 12.FEB.2009 18:46:30

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 12.FEB.2009 18:55:22

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

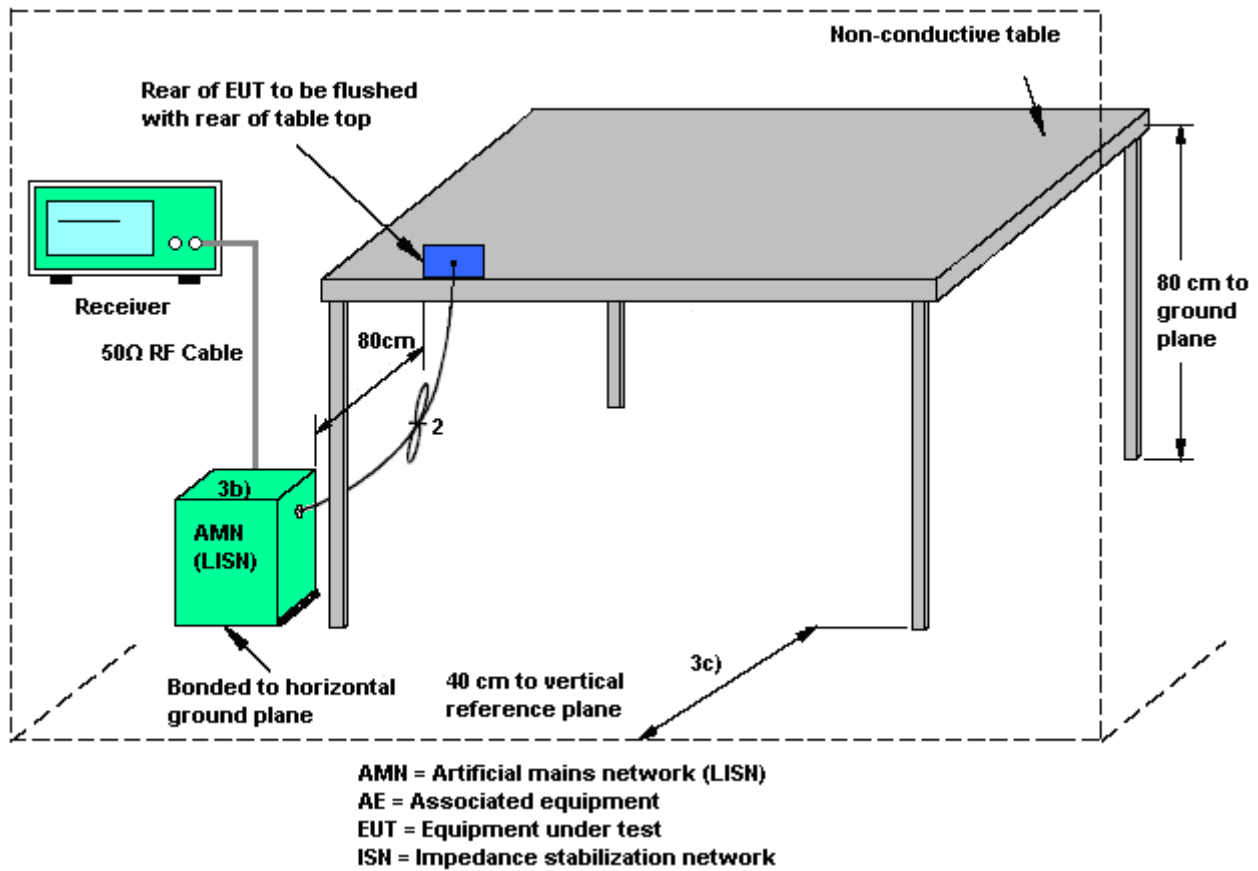
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

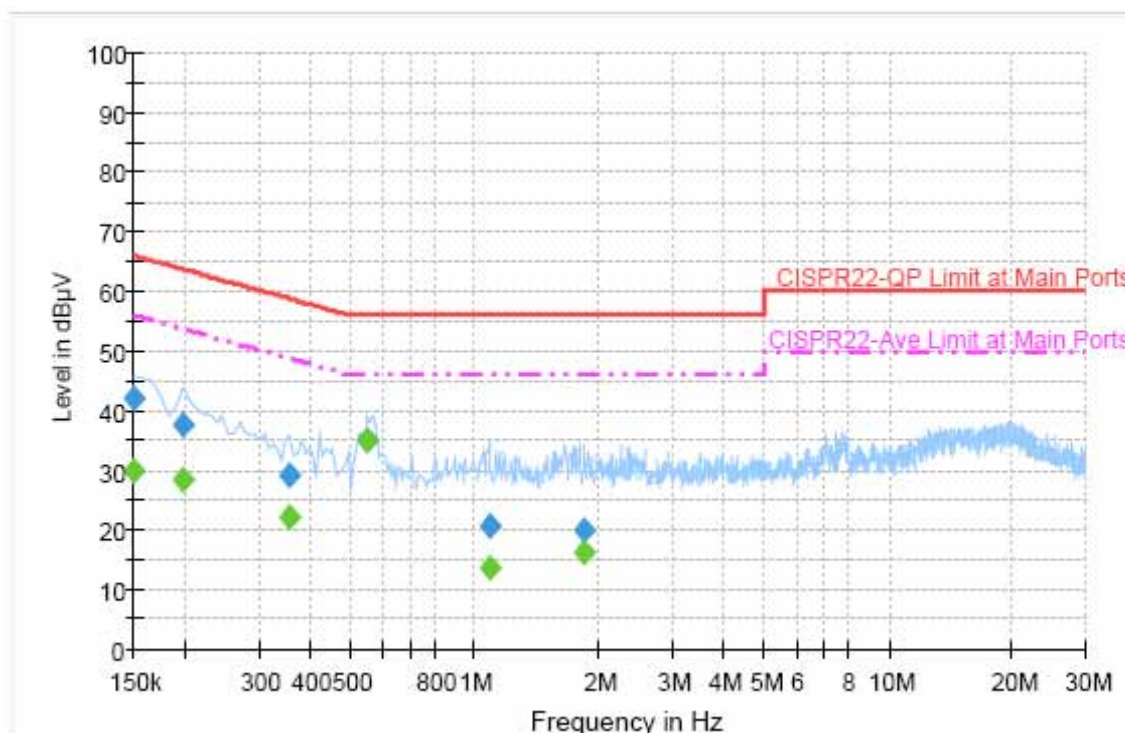
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	43~44%
		Phase :	Line
Function Type :	WLAN Link (2.4G) + Cradle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



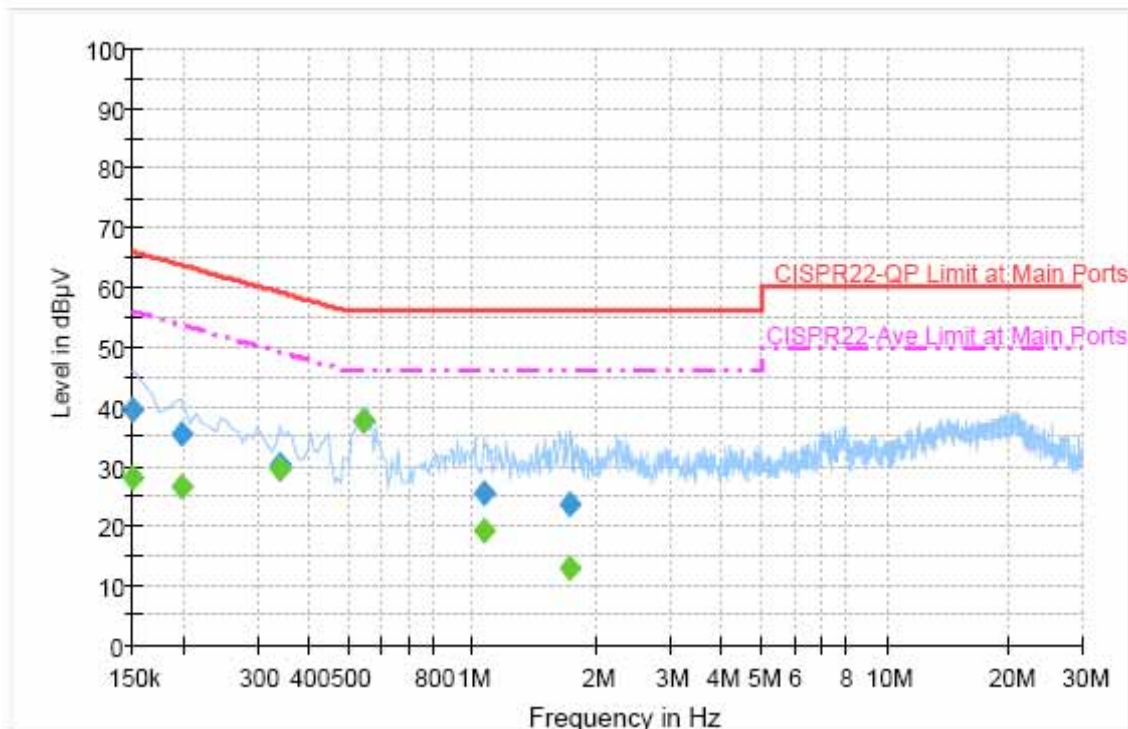
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	42.2	Off	L1	19.4	23.8	66.0
0.198000	37.8	Off	L1	19.3	25.9	63.7
0.358000	29.3	Off	L1	19.3	29.5	58.8
0.550000	35.1	Off	L1	19.3	20.9	56.0
1.086000	20.6	Off	L1	19.4	35.4	56.0
1.838000	20.0	Off	L1	19.4	36.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.7	Off	L1	19.4	26.3	56.0
0.198000	28.5	Off	L1	19.3	25.2	53.7
0.358000	22.3	Off	L1	19.3	26.5	48.8
0.550000	34.9	Off	L1	19.3	11.1	46.0
1.086000	13.7	Off	L1	19.4	32.3	46.0
1.838000	16.1	Off	L1	19.4	29.9	46.0

Test Mode :	Mode 1	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	43~44%
		Phase :	Neutral
Function Type :	WLAN Link (2.4G) + Cradle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	39.4	Off	N	19.4	26.6	66.0
0.198000	35.3	Off	N	19.3	28.4	63.7
0.342000	30.3	Off	N	19.3	28.9	59.2
0.542000	37.6	Off	N	19.3	18.4	56.0
1.062000	25.4	Off	N	19.4	30.6	56.0
1.726000	23.6	Off	N	19.5	32.4	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	28.1	Off	N	19.4	27.9	56.0
0.198000	26.6	Off	N	19.3	27.1	53.7
0.342000	29.7	Off	N	19.3	19.5	49.2
0.542000	37.8	Off	N	19.3	8.2	46.0
1.062000	19.3	Off	N	19.4	26.7	46.0
1.726000	13.1	Off	N	19.5	32.9	46.0

3.6 Radiated Emission Measurement

3.6.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.6.2 Measuring Instruments

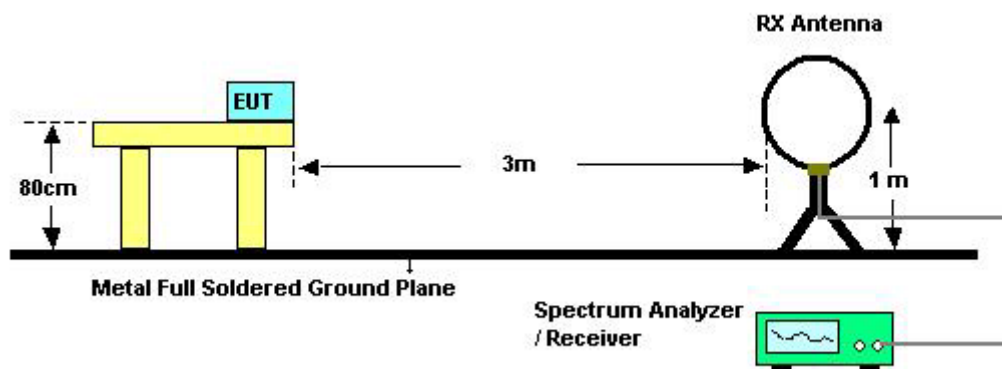
See list of measuring instruments of this test report.

3.6.3 Test Procedures

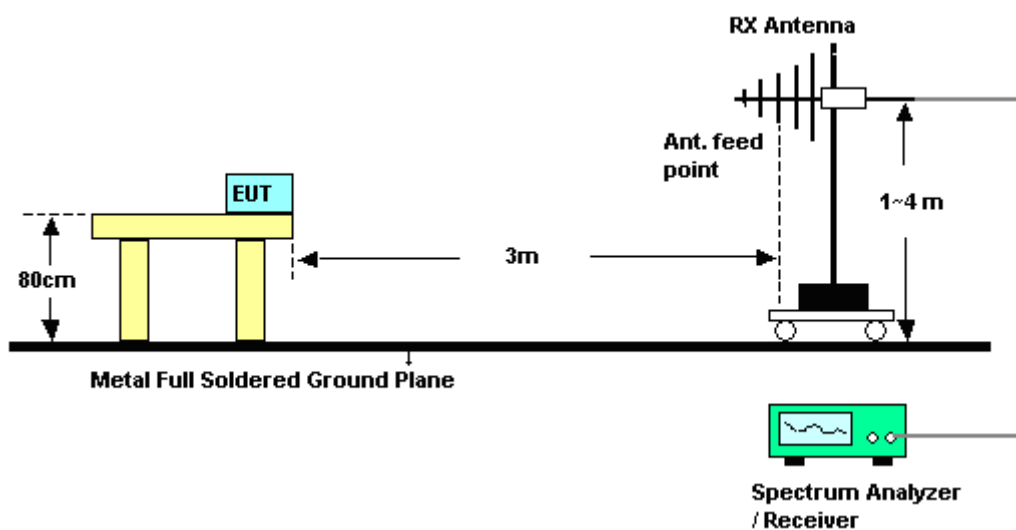
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.6.5 Test Results of Radiated Emissions (9kHz ~ 30MHz)

Temperature	24~26°C	Humidity	47~49%
Test Engineer	Elvis Chen		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

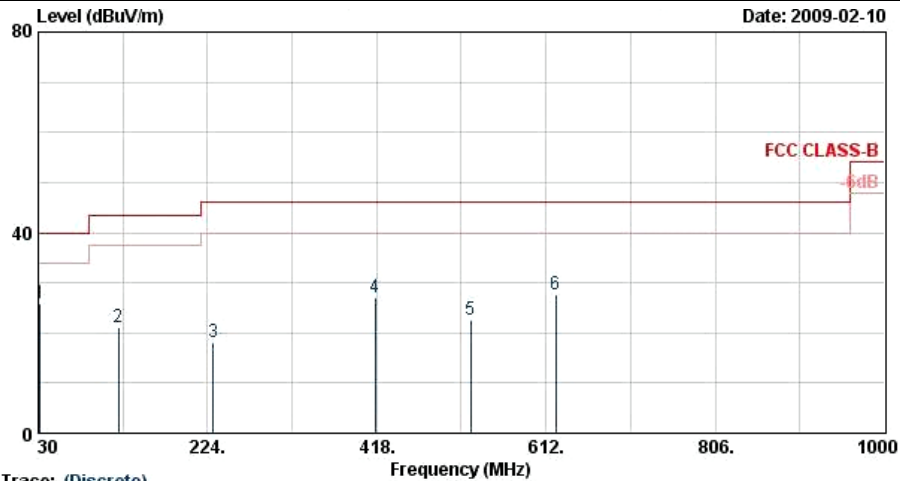
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.6.6 Test Result of Radiated Emission (30MHz ~ 1GHz)

Test Mode :	Mode 1	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

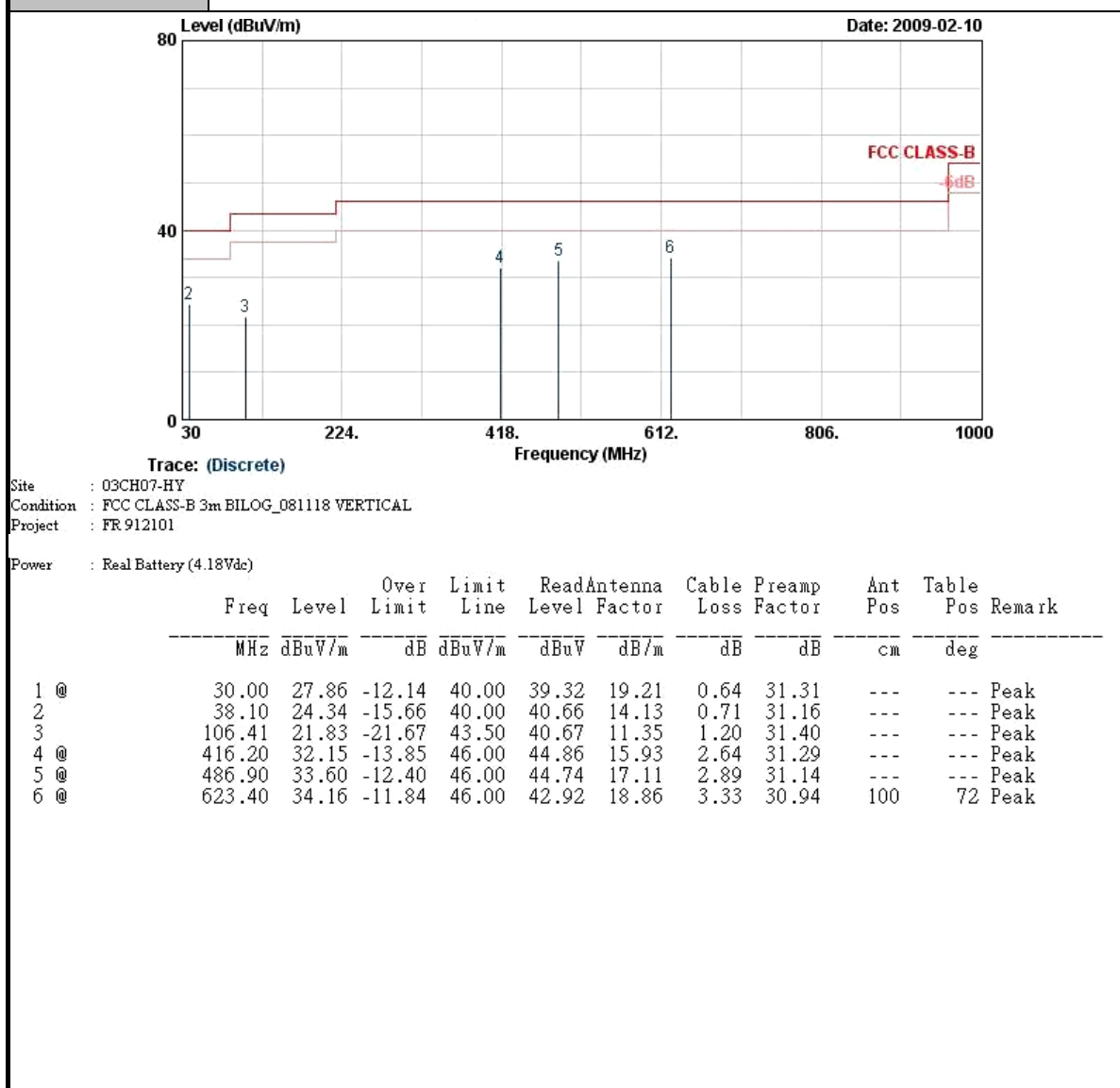
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Factor	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	31.89	25.76	-14.24	40.00	38.54	17.82	0.66	31.26	100	142	Peak
2	121.53	21.15	-22.35	43.50	39.02	12.25	1.29	31.40	---	---	Peak
3	230.61	18.10	-27.90	46.00	36.26	11.50	1.84	31.50	---	---	Peak
4	416.20	27.08	-18.92	46.00	39.79	15.93	2.64	31.29	---	---	Peak
5	526.10	22.69	-23.31	46.00	33.04	17.69	3.02	31.06	---	---	Peak
6	623.40	27.61	-18.39	46.00	36.36	18.86	3.33	30.94	---	---	Peak



FCC Test Report

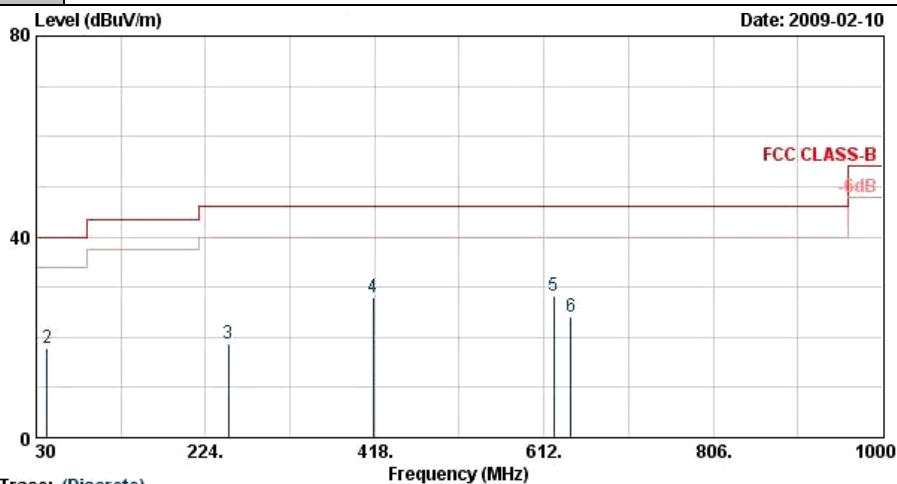
Report No. : FR912101A

Test Mode :	Mode 1	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			





Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

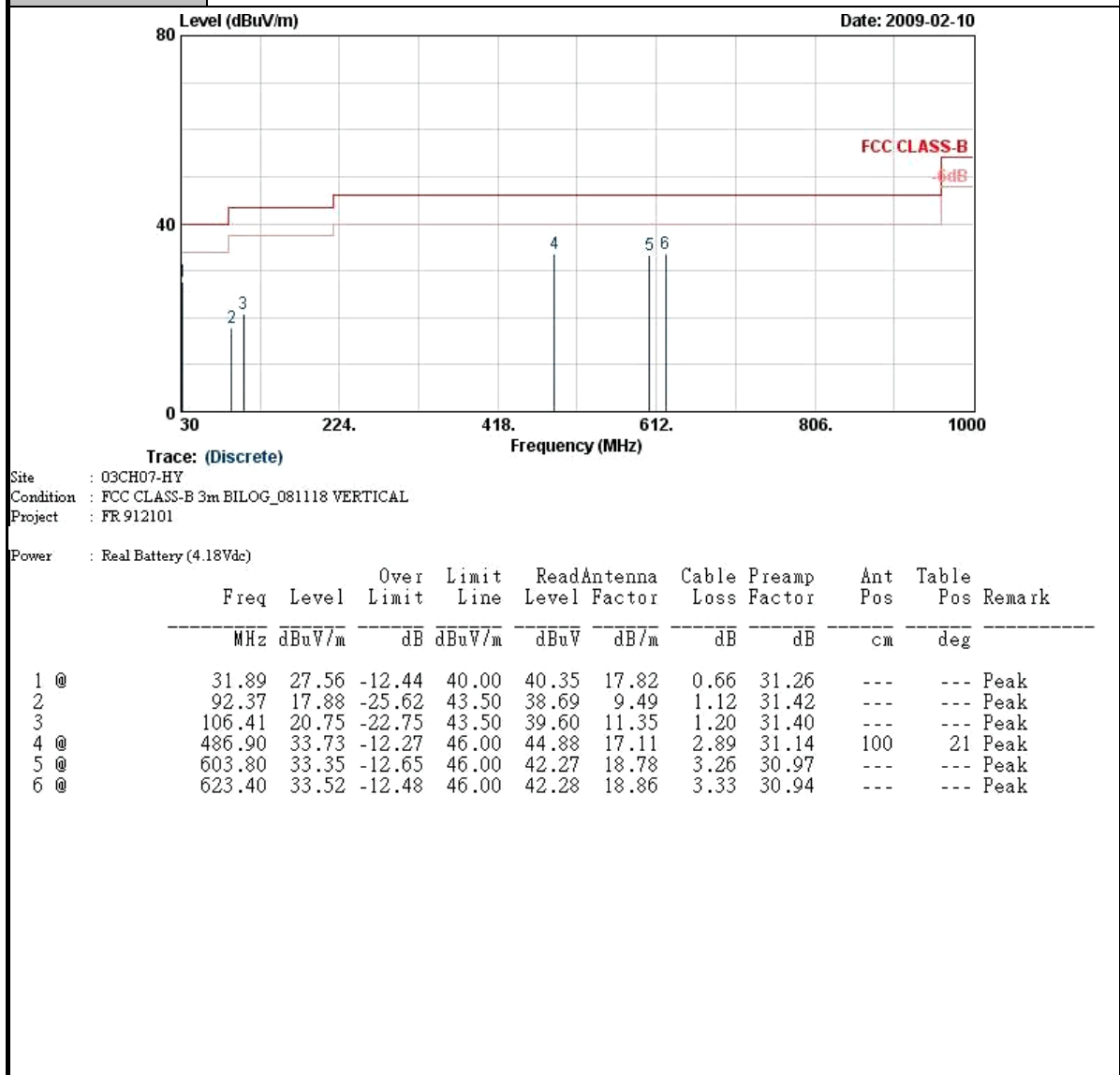
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1 @	30.27	25.85	-14.15	40.00	37.31	19.21	0.64	31.31	100	36 Peak
2	42.69	17.95	-22.05	40.00	36.99	11.42	0.72	31.18	---	Peak
3	250.05	18.65	-27.35	46.00	35.06	13.12	1.92	31.45	---	Peak
4	416.20	28.08	-17.92	46.00	40.79	15.93	2.64	31.29	---	Peak
5	623.40	28.31	-17.69	46.00	37.07	18.86	3.33	30.94	---	Peak
6	643.00	24.07	-21.93	46.00	32.66	18.93	3.39	30.90	---	Peak



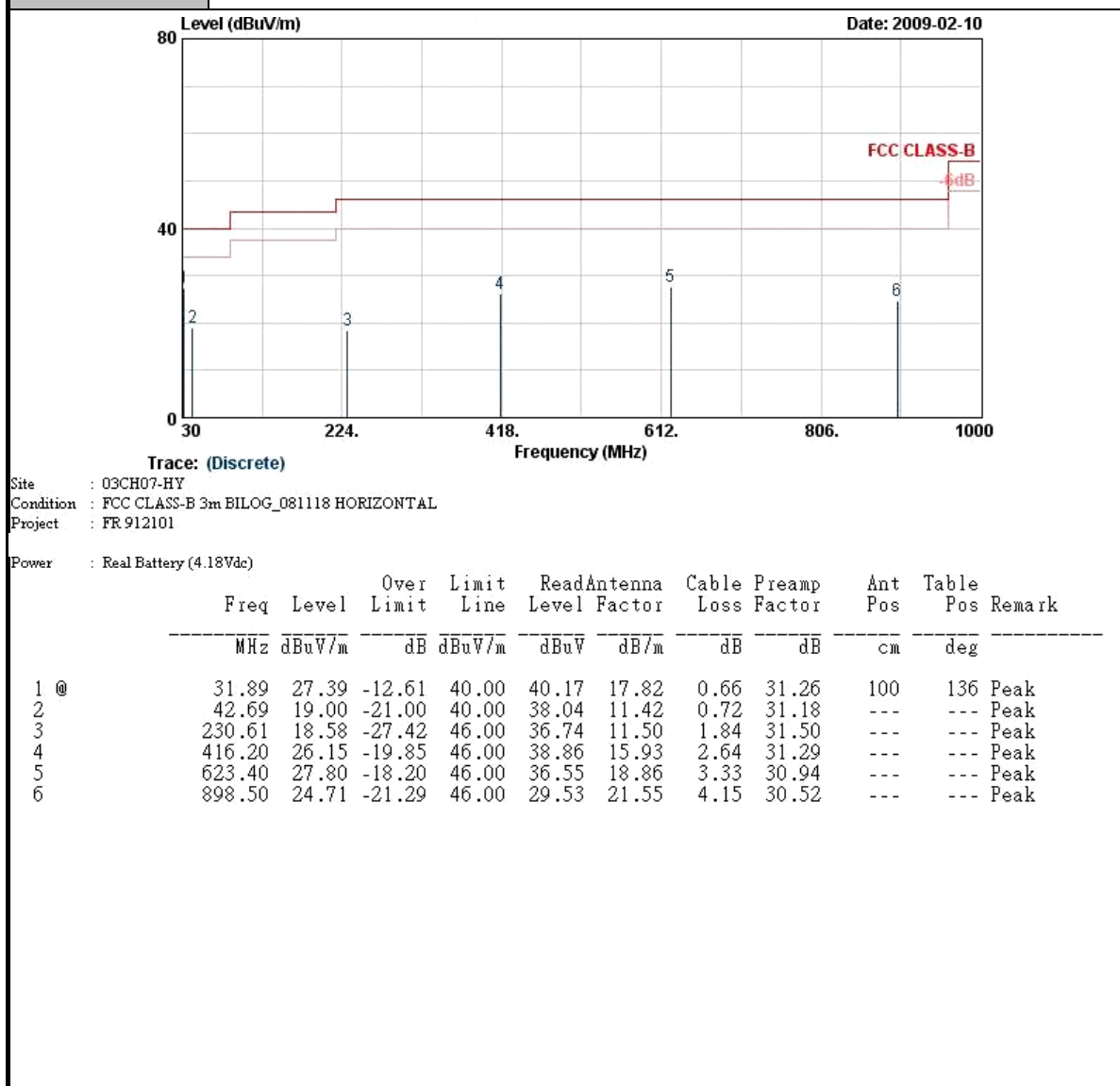
FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			

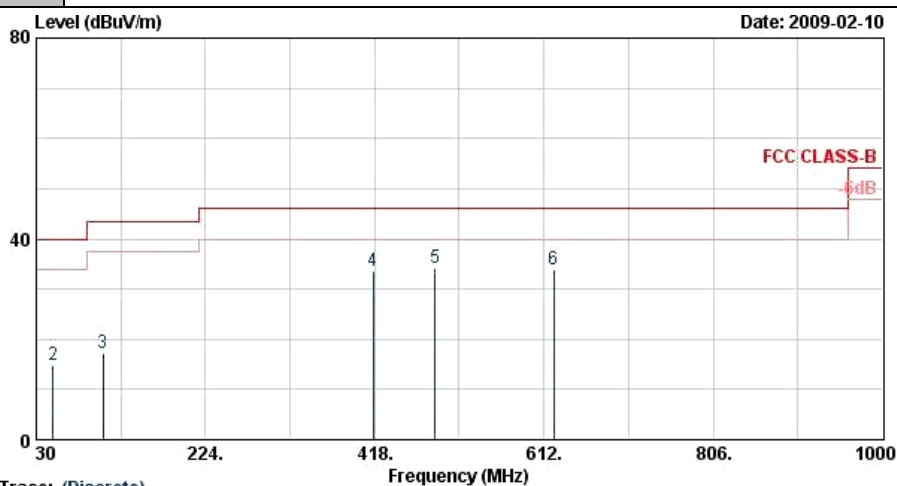


Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			





Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

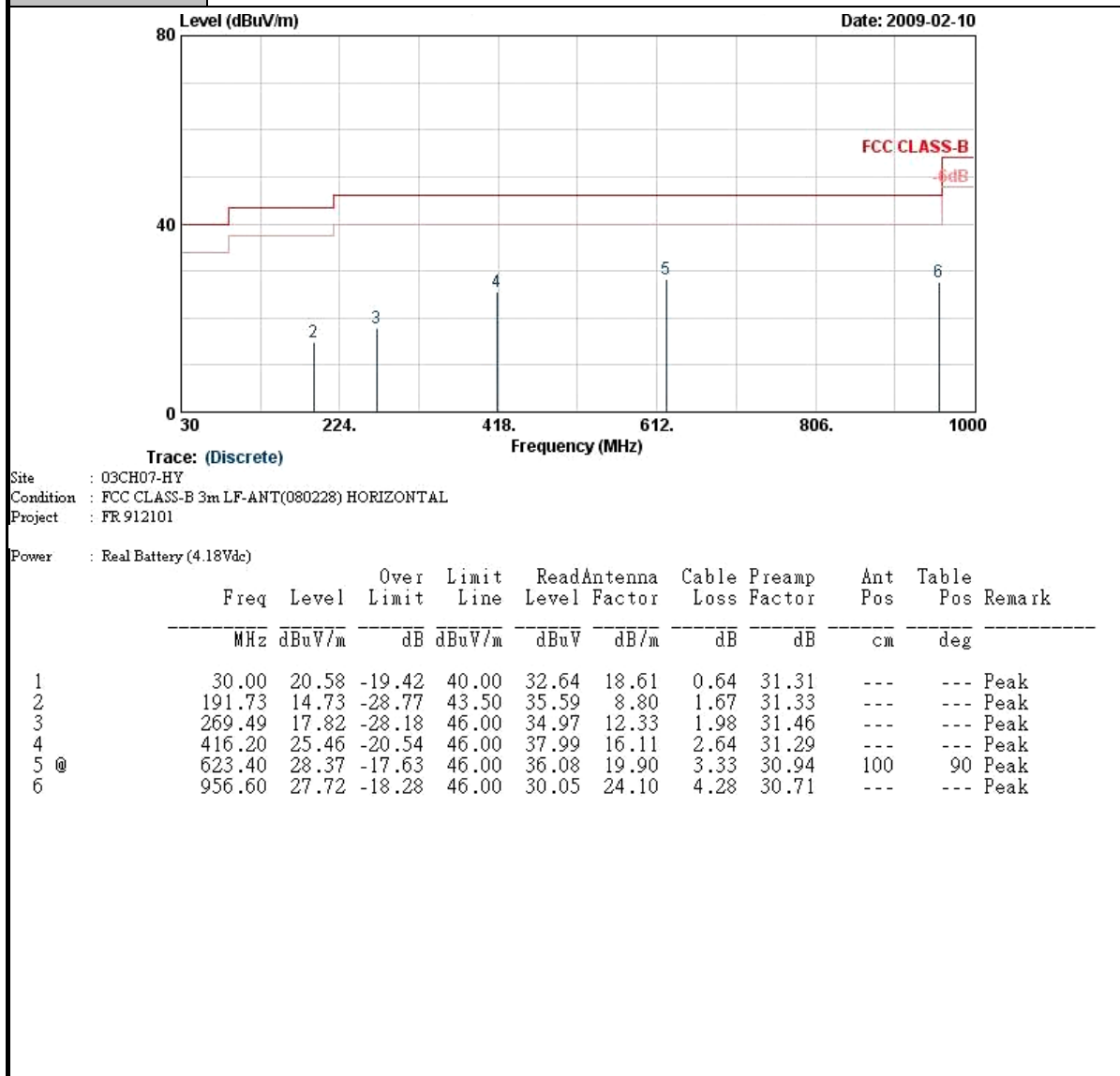
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.81	25.57	-14.43	40.00	37.69	18.51	0.65	31.28	---	---	Peak
2	48.90	14.83	-25.17	40.00	36.49	8.76	0.79	31.22	---	---	Peak
3	106.41	17.12	-26.38	43.50	35.97	11.35	1.20	31.40	---	---	Peak
4 @	416.20	33.54	-12.46	46.00	46.26	15.93	2.64	31.29	---	---	Peak
5 @	486.90	34.06	-11.94	46.00	45.20	17.11	2.89	31.14	100	248	Peak
6 @	623.40	33.94	-12.06	46.00	42.70	18.86	3.33	30.94	---	---	Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			

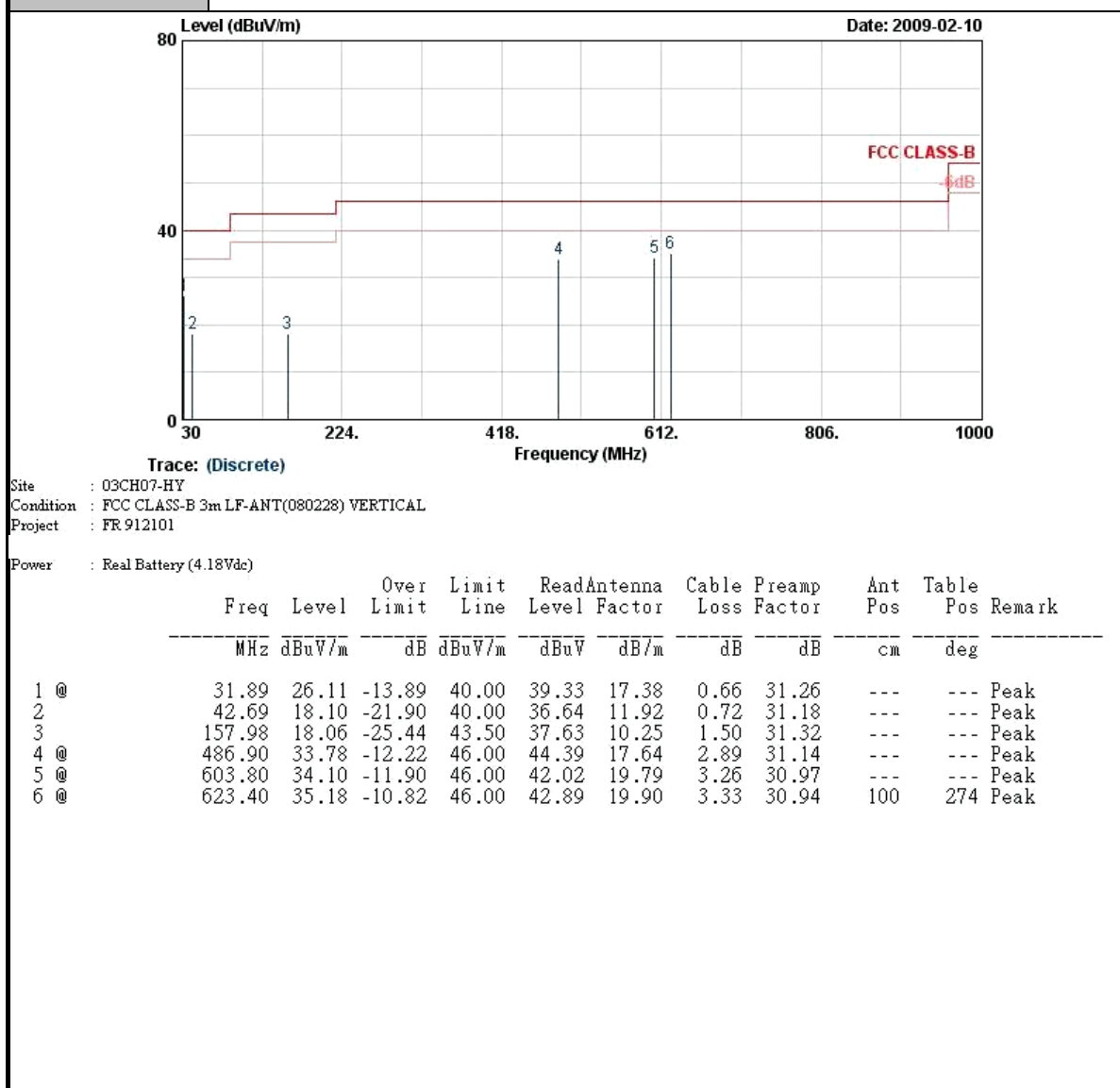




FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			

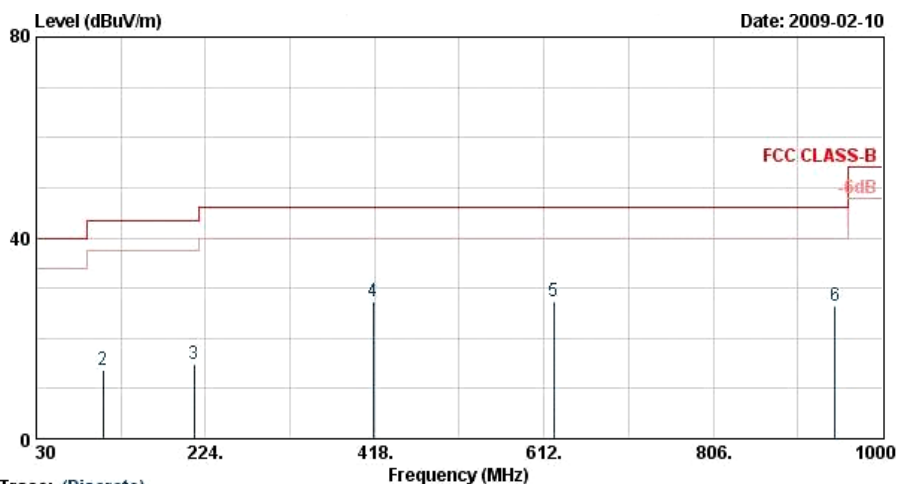




FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(080228) HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

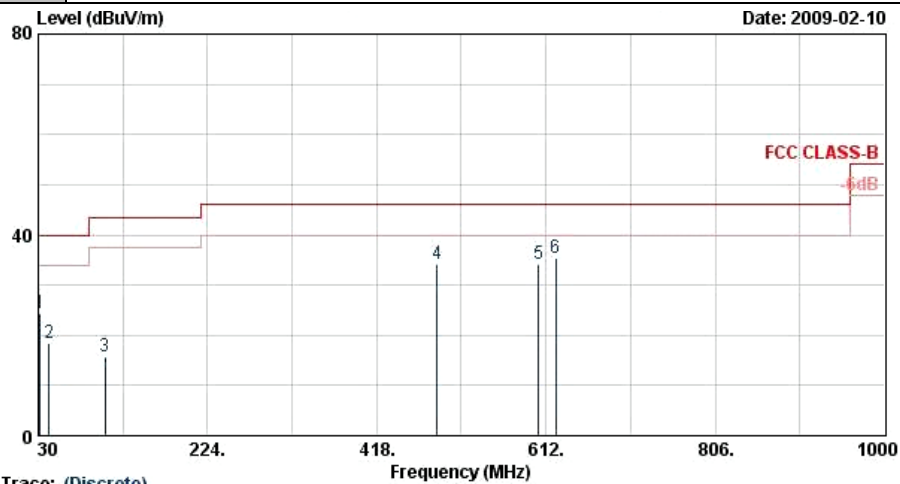
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.81	20.99	-19.01	40.00	33.63	17.99	0.65	31.28	---	---
2	106.41	13.77	-29.73	43.50	33.54	10.42	1.20	31.40	---	---
3	211.17	14.73	-28.77	43.50	34.92	9.44	1.76	31.39	---	---
4 @	416.20	27.49	-18.51	46.00	40.02	16.11	2.64	31.29	100	217
5	623.40	27.49	-18.51	46.00	35.20	19.90	3.33	30.94	---	---
6	946.10	26.61	-19.39	46.00	29.14	23.95	4.25	30.73	---	---



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(080228) VERTICAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

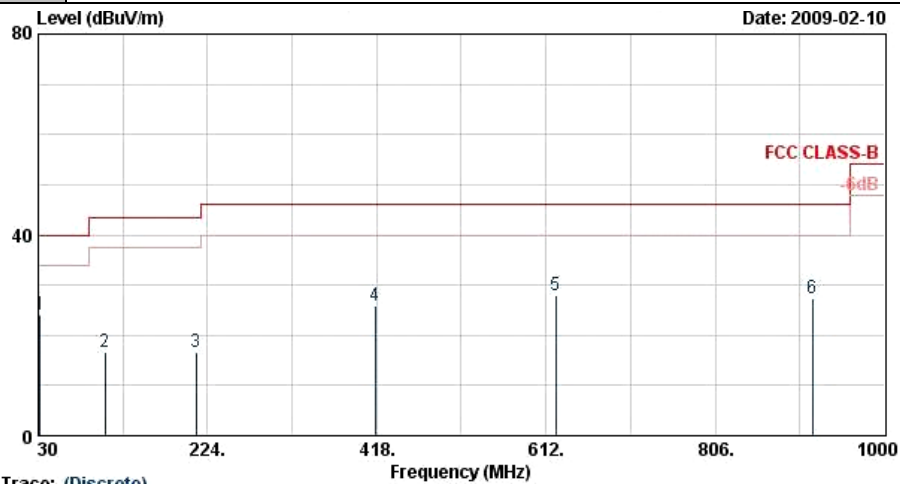
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	32.16	24.31	-15.69	40.00	37.54	17.38	0.66	31.26	---	---	Peak
2	42.69	18.44	-21.56	40.00	36.99	11.92	0.72	31.18	---	---	Peak
3	106.41	15.75	-27.75	43.50	35.52	10.42	1.20	31.40	---	---	Peak
4 @	486.90	34.20	-11.80	46.00	44.81	17.64	2.89	31.14	---	---	Peak
5 @	603.80	34.09	-11.91	46.00	42.01	19.79	3.26	30.97	---	---	Peak
6 @	623.40	35.51	-10.49	46.00	43.22	19.90	3.33	30.94	100	102	Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :			



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(080228) HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

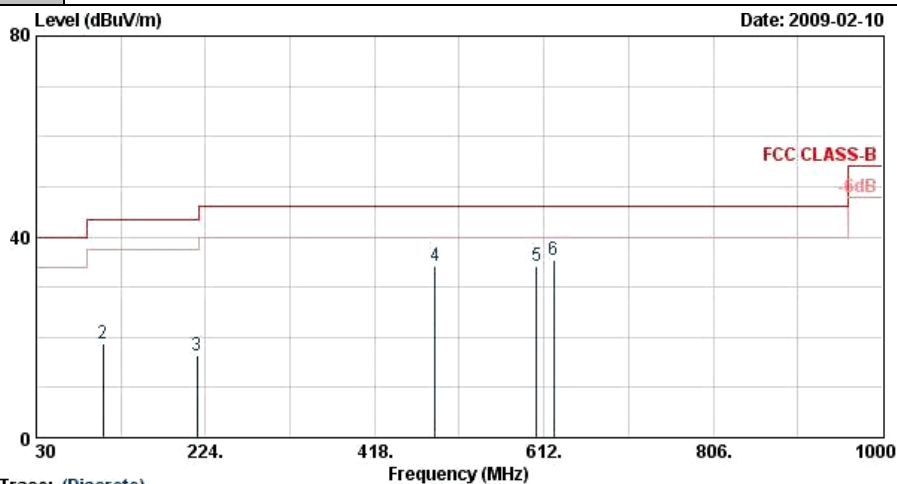
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	31.89	24.20	-15.80	40.00	37.42	17.38	0.66	31.26	100	79	Peak
2	106.41	16.56	-26.94	43.50	36.33	10.42	1.20	31.40	---	---	Peak
3	211.17	16.74	-26.76	43.50	36.93	9.44	1.76	31.39	---	---	Peak
4	416.20	25.81	-20.19	46.00	38.34	16.11	2.64	31.29	---	---	Peak
5	623.40	27.98	-18.02	46.00	35.69	19.90	3.33	30.94	---	---	Peak
6	917.40	27.37	-18.63	46.00	30.24	23.54	4.20	30.60	---	---	Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :			



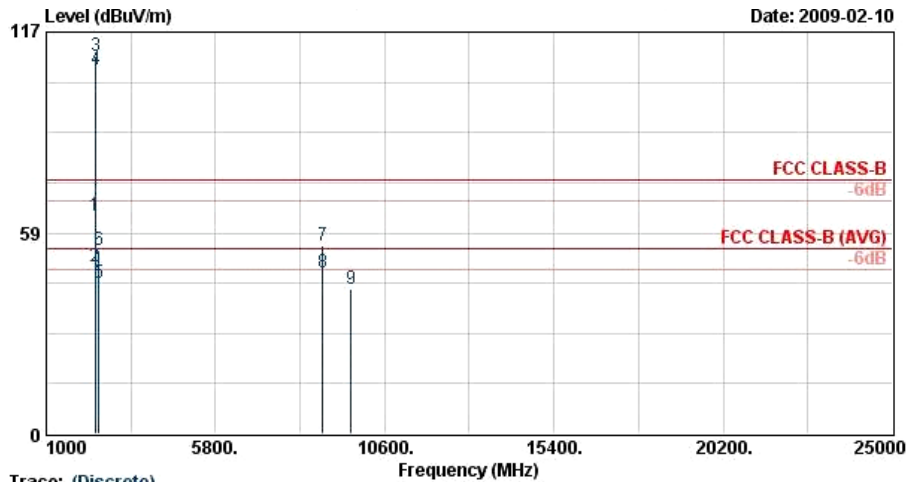
Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(080228) VERTICAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV		dB	cm	deg	
1	30.00	21.45	-18.55	40.00	33.51	18.61	0.64	31.31	---	Peak
2	106.41	18.77	-24.73	43.50	38.55	10.42	1.20	31.40	---	Peak
3	214.41	16.31	-27.19	43.50	36.33	9.63	1.77	31.42	---	Peak
4 @	486.90	34.07	-11.93	46.00	44.67	17.64	2.89	31.14	---	Peak
5 @	603.80	34.22	-11.78	46.00	42.14	19.79	3.26	30.97	---	Peak
6 @	623.40	35.37	-10.63	46.00	43.08	19.90	3.33	30.94	100	59 Peak

3.6.7 Test Result of Radiated Emission $\geq 1\text{GHz}$

Test Mode :	Mode 1	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 912101
Power : Real Battery (4.18Vdc)

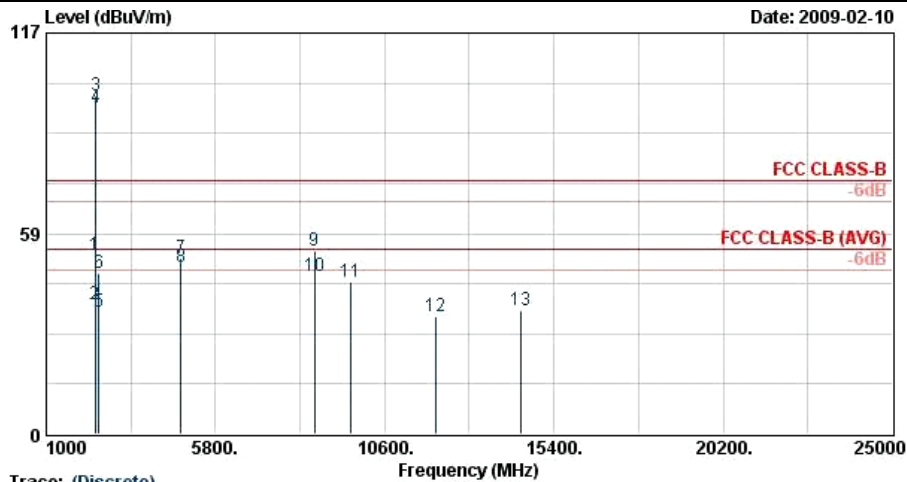
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	2389.99	63.65	-10.35	74.00	61.55	32.32	5.46	35.68	112	35 Peak
2 @	2389.99	48.64	-5.36	54.00	46.54	32.32	5.46	35.68	112	35 Average
3 @	2412.00	110.10			108.02	32.32	5.44	35.68	112	35 Peak
4 @	2412.00	106.17			104.09	32.32	5.44	35.68	112	35 Average
5 @	2500.00	43.82	-10.18	54.00	41.85	32.30	5.37	35.70	112	35 Average
6	2500.00	53.63	-20.37	74.00	51.66	32.30	5.37	35.70	112	35 Peak
7	8841.00	54.77	-19.23	74.00	42.38	38.60	10.29	36.50	100	127 Peak
8 @	8841.00	46.76	-7.24	54.00	34.37	38.60	10.29	36.50	100	127 Average
9	9645.00	42.33	-31.67	74.00	78.41	-10.09	10.74	36.73	100	81 Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 1	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Trace: (Discrete)

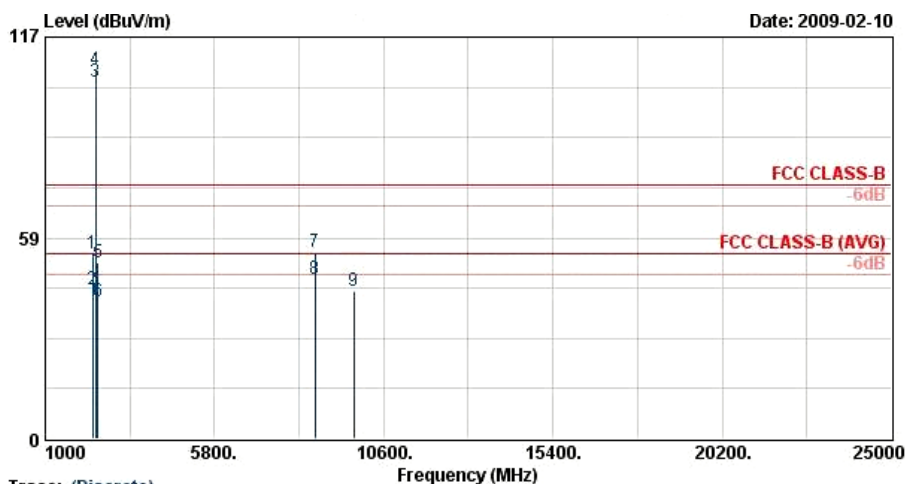
Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2389.99	52.00	-22.00	74.00	49.92	32.30	5.46	35.68	100	45	Peak
2	2389.99	38.04	-15.96	54.00	35.96	32.30	5.46	35.68	100	45	Average
3 X	2412.00	98.86			96.80	32.30	5.44	35.68	100	45	Peak
4 @	2412.00	95.11			93.05	32.30	5.44	35.68	100	45	Average
5	2486.00	35.82	-18.18	54.00	33.83	32.30	5.38	35.70	100	45	Average
6	2486.00	46.95	-27.05	74.00	44.96	32.30	5.38	35.70	100	45	Peak
7	4821.00	51.17	-22.83	74.00	44.07	34.97	7.81	35.67	100	44	Peak
8 !	4821.00	48.59	-5.41	54.00	41.49	34.97	7.81	35.67	100	44	Average
9	8610.00	53.40	-20.60	74.00	42.18	37.37	10.22	36.36	100	271	Peak
10	8610.00	45.97	-8.03	54.00	34.74	37.37	10.22	36.36	100	271	Average
11	9645.00	44.41	-29.59	74.00	80.48	-10.09	10.74	36.73	100	182	Peak
12	12054.00	34.29	-39.71	74.00	68.26	-9.77	12.07	36.27	100	49	Peak
13	14469.00	35.92	-38.08	74.00	64.90	-6.57	12.75	35.16	100	38	Peak



Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

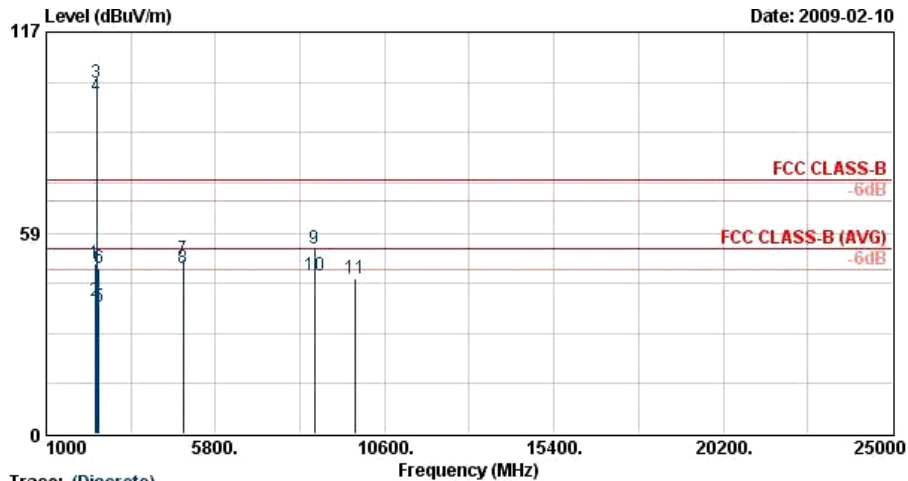
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2348.00	54.09	-19.91	74.00	51.93	32.33	5.50	35.67	106	25 Peak
2 @	2348.00	43.40	-10.60	54.00	41.24	32.33	5.50	35.67	106	25 Average
3 @	2437.00	103.86			101.82	32.31	5.41	35.69	106	25 Average
4 @	2437.00	107.31			105.25	32.31	5.43	35.69	106	25 Peak
5	2484.00	51.31	-22.69	74.00	49.32	32.30	5.38	35.70	106	25 Peak
6 @	2484.00	40.12	-13.88	54.00	38.13	32.30	5.38	35.70	106	25 Average
7	8661.00	54.56	-19.44	74.00	42.22	38.50	10.23	36.39	100	28 Peak
8 @	8661.00	46.51	-7.49	54.00	34.17	38.50	10.23	36.39	100	28 Average
9	9741.00	42.91	-31.09	74.00	78.72	-9.87	10.81	36.75	100	126 Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

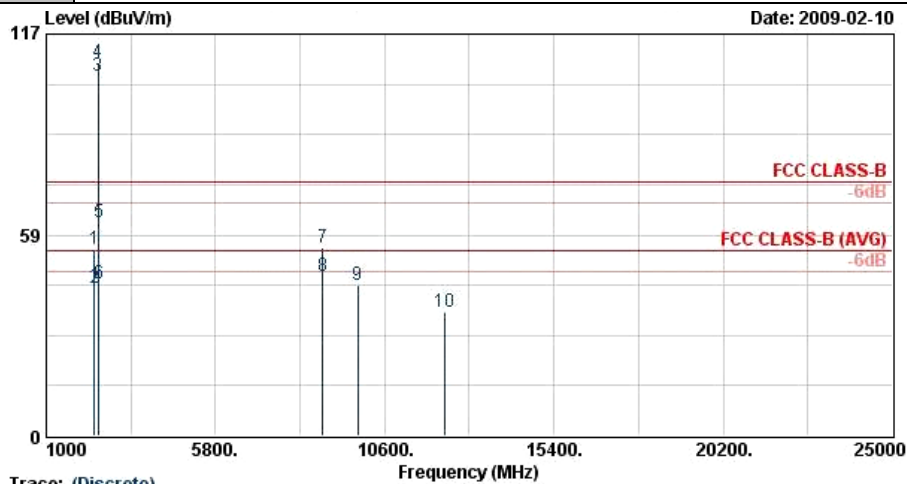
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2390.00	49.42	-24.58	74.00	47.35	32.30	5.46	35.68	117	298 Peak
2	2390.00	38.86	-15.14	54.00	36.78	32.30	5.46	35.68	117	298 Average
3 X	2437.00	102.05			100.02	32.30	5.41	35.69	117	298 Peak
4 @	2437.00	98.28			96.25	32.30	5.41	35.69	117	298 Average
5	2492.00	36.89	-17.11	54.00	34.92	32.30	5.37	35.70	117	298 Average
6	2492.00	48.45	-25.55	74.00	46.48	32.30	5.37	35.70	117	298 Peak
7	4878.00	50.86	-23.14	74.00	43.68	34.98	7.85	35.65	100	40 Peak
8 !	4878.00	48.46	-5.54	54.00	41.28	34.98	7.85	35.65	100	40 Average
9	8610.00	54.05	-19.95	74.00	42.82	37.37	10.22	36.36	100	158 Peak
10	8610.00	46.14	-7.86	54.00	34.91	37.37	10.22	36.36	100	158 Average
11	9741.00	45.04	-28.96	74.00	80.86	-9.87	10.81	36.75	100	39 Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

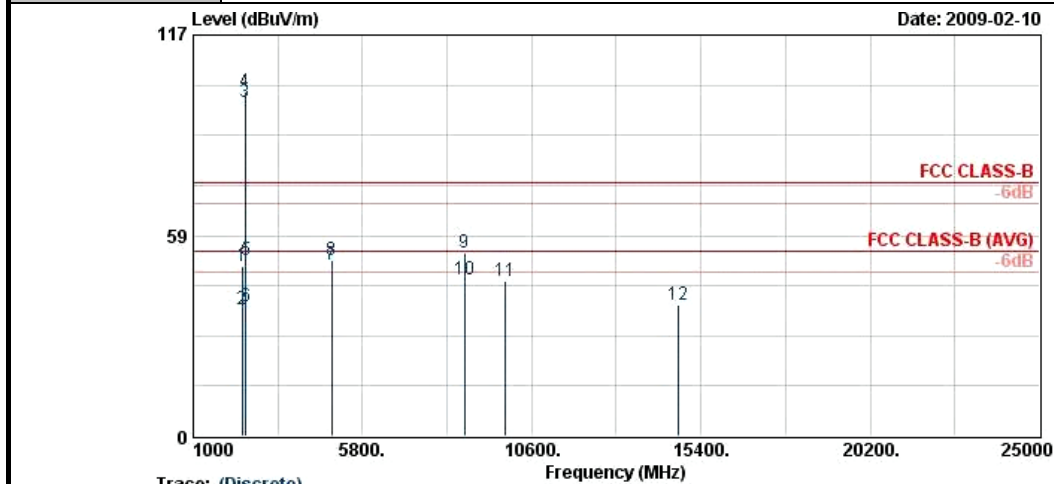
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2374.00	54.47	-19.53	74.00	52.35	32.32	5.47	35.68	107	27	Peak
2 @	2374.00	43.23	-10.77	54.00	41.11	32.32	5.47	35.68	107	27	Average
3 @	2462.00	104.83			102.81	32.31	5.40	35.69	107	27	Average
4 @	2462.00	108.74			106.73	32.31	5.40	35.69	107	27	Peak
5 @	2483.50	62.17	-11.83	74.00	60.18	32.30	5.38	35.70	107	27	Peak
6 @	2483.50	44.52	-9.48	54.00	42.53	32.30	5.38	35.70	107	27	Average
7	8838.00	54.67	-19.33	74.00	42.27	38.60	10.29	36.50	100	1	Peak
8 @	8838.00	46.60	-7.40	54.00	34.21	38.60	10.29	36.50	100	1	Average
9	9846.00	43.96	-30.04	74.00	79.48	-9.63	10.89	36.77	100	79	Peak
10	12306.00	35.88	-38.12	74.00	70.35	-10.65	12.31	36.12	100	148	Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

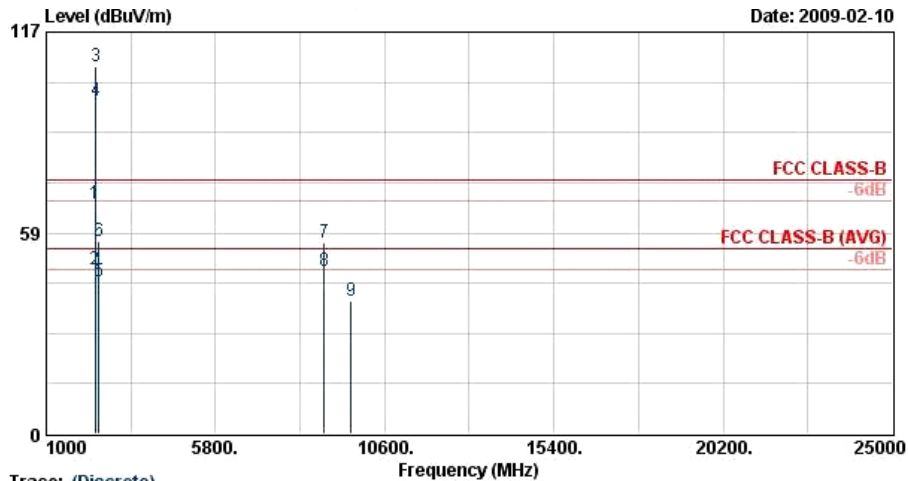
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2382.00	49.39	-24.61	74.00	47.29	32.30	5.47	35.68	117	306	Peak
2	2382.00	37.01	-16.99	54.00	34.91	32.30	5.47	35.68	117	306	Average
3 @	2462.00	97.23			95.22	32.30	5.40	35.69	117	306	Average
4 X	2462.00	100.61			98.60	32.30	5.40	35.69	117	306	Peak
5	2483.50	51.35	-22.65	74.00	49.36	32.30	5.38	35.70	117	306	Peak
6	2483.50	37.97	-16.03	54.00	35.98	32.30	5.38	35.70	117	306	Average
7 !	4926.00	49.89	-4.11	54.00	42.64	34.99	7.89	35.63	100	47	Average
8	4926.00	51.46	-22.54	74.00	44.21	34.99	7.89	35.63	100	47	Peak
9	8697.00	53.63	-20.37	74.00	42.38	37.42	10.24	36.42	100	68	Peak
10	8697.00	45.57	-8.43	54.00	34.33	37.42	10.24	36.42	100	68	Average
11	9846.00	45.44	-28.56	74.00	80.95	-9.63	10.89	36.77	100	96	Peak
12	14769.00	38.35	-35.65	74.00	67.33	-6.38	12.88	35.48	100	164	Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



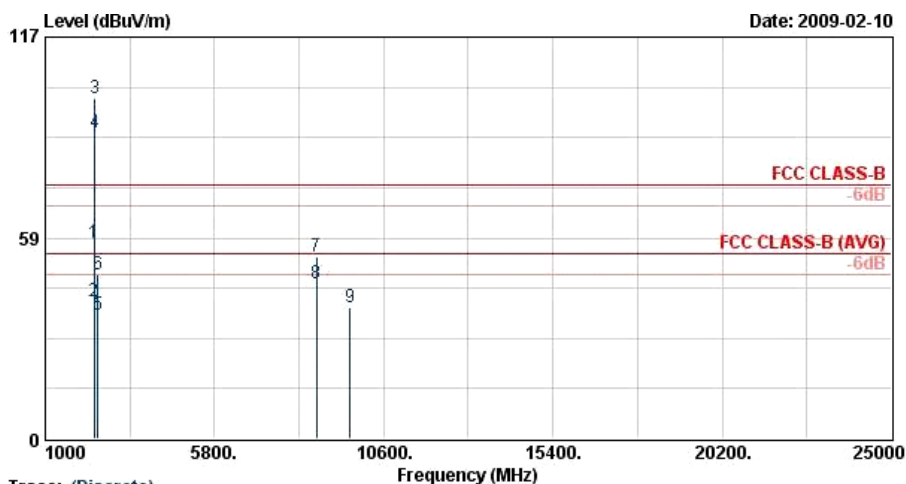
Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	2388.85	66.98	-7.02	74.00	64.88	32.32	5.46	35.68	134	24 Peak
2 @	2388.85	47.64	-6.36	54.00	45.54	32.32	5.46	35.68	134	24 Average
3 @	2412.00	106.86			104.78	32.32	5.44	35.68	134	24 Peak
4 @	2412.00	97.09			95.01	32.32	5.44	35.68	134	24 Average
5 @	2494.00	44.21	-9.79	54.00	42.24	32.30	5.37	35.70	134	24 Average
6	2494.00	56.13	-17.87	74.00	54.16	32.30	5.37	35.70	134	24 Peak
7	8886.00	55.46	-18.54	74.00	43.05	38.63	10.30	36.53	100	73 Peak
8 @	8886.00	47.42	-6.58	54.00	35.01	38.63	10.30	36.53	100	73 Average
9	9645.00	38.67	-35.33	74.00	74.75	-10.09	10.74	36.73	100	21 Peak



Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

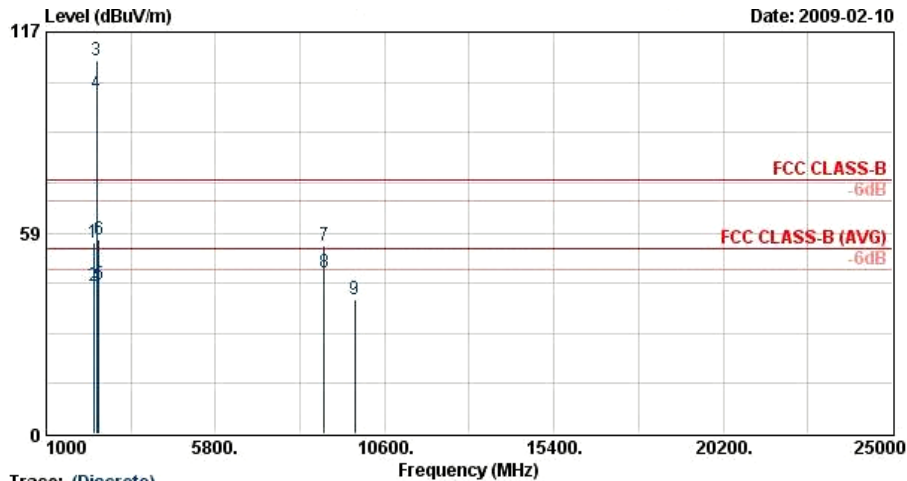
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2388.85	57.19	-16.81	74.00	55.11	32.30	5.46	35.68	100	45 Peak
2	2388.85	39.81	-14.19	54.00	37.73	32.30	5.46	35.68	100	45 Average
3 X	2412.00	99.11			97.05	32.30	5.44	35.68	100	45 Peak
4 @	2412.00	89.32			87.26	32.30	5.44	35.68	100	45 Average
5	2486.00	36.08	-17.92	54.00	34.09	32.30	5.38	35.70	100	45 Average
6	2486.00	47.78	-26.22	74.00	45.79	32.30	5.38	35.70	100	45 Peak
7	8694.00	53.10	-20.90	74.00	41.85	37.42	10.24	36.42	100	67 Peak
8	8694.00	45.13	-8.87	54.00	33.89	37.42	10.24	36.42	100	67 Average
9	9648.00	38.43	-35.57	74.00	74.48	-10.07	10.74	36.73	---	--- Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



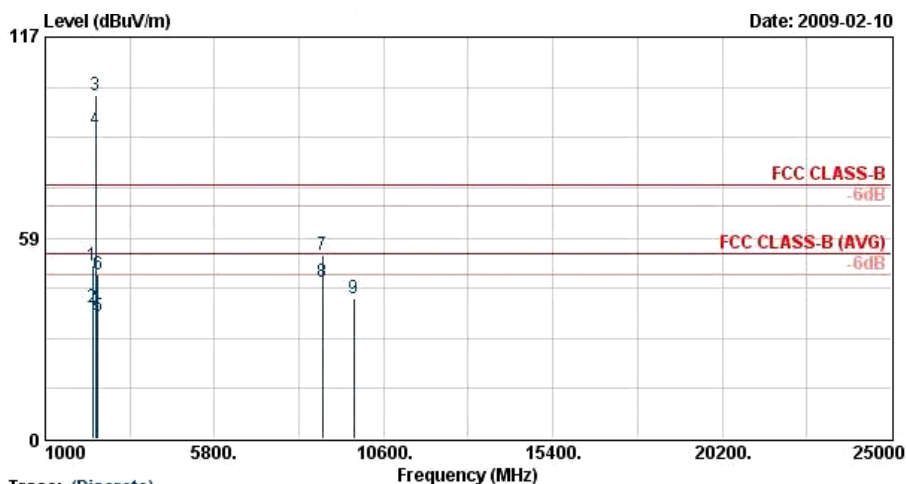
Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	2350.00	55.78	-18.22	74.00	53.62	32.33	5.50	35.67	111	62
2 @	2350.00	43.05	-10.95	54.00	40.89	32.33	5.50	35.67	111	62
3 @	2437.00	108.71			106.65	32.31	5.43	35.69	111	62
4 @	2437.00	98.97			96.93	32.31	5.41	35.69	111	62
5 @	2484.00	43.64	-10.36	54.00	41.65	32.30	5.38	35.70	111	62
6 @	2484.00	56.39	-17.61	74.00	54.39	32.30	5.38	35.70	111	62
7	8886.00	54.78	-19.22	74.00	42.37	38.63	10.30	36.53	100	28
8 @	8886.00	46.78	-7.22	54.00	34.37	38.63	10.30	36.53	100	28
9	9741.00	39.19	-34.81	74.00	75.00	-9.87	10.81	36.75	100	82



Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	06	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

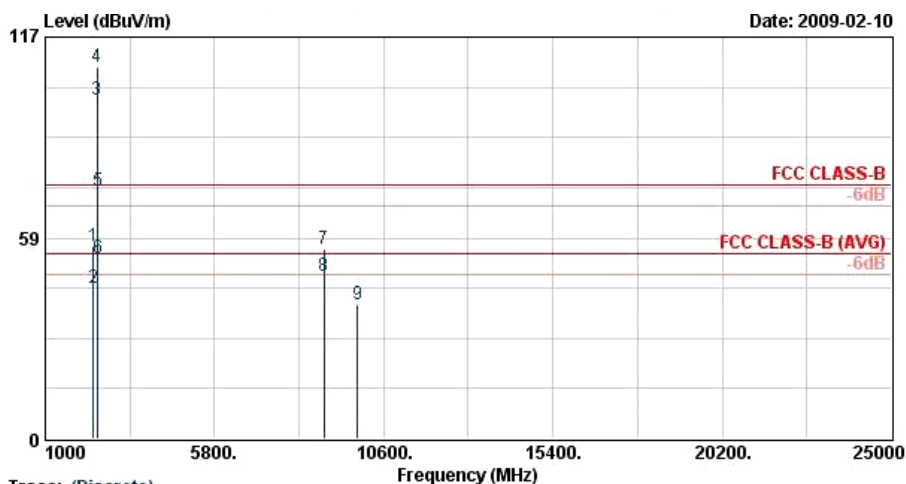
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2348.00	50.65	-23.35	74.00	48.52	32.30	5.50	35.67	100	309 Peak
2 @	2348.00	38.43	-15.57	54.00	36.30	32.30	5.50	35.67	100	309 Average
3 @	2437.00	99.92			97.87	32.30	5.43	35.69	100	309 Peak
4 @	2437.00	90.12			88.09	32.30	5.41	35.69	100	309 Average
5 @	2494.00	35.78	-18.22	54.00	33.81	32.30	5.37	35.70	100	309 Average
6	2494.00	47.83	-26.17	74.00	45.86	32.30	5.37	35.70	100	309 Peak
7	8862.00	53.58	-20.42	74.00	42.29	37.51	10.29	36.51	100	49 Peak
8 @	8862.00	45.50	-8.50	54.00	34.21	37.51	10.29	36.51	100	49 Average
9	9750.00	40.69	-33.31	74.00	76.46	-9.85	10.82	36.75	100	56 Peak



FCC Test Report

Report No. : FR912101A

Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals		



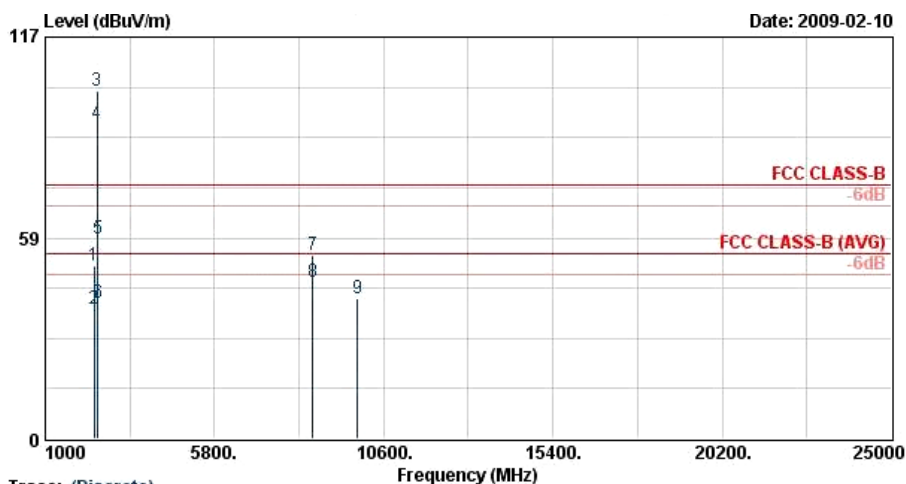
Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2372.00	56.27	-17.73	74.00	54.15	32.32	5.47	35.68	136	37 Peak
2 @	2372.00	44.14	-9.86	54.00	42.02	32.32	5.47	35.68	136	37 Average
3 @	2462.00	98.58			96.56	32.31	5.40	35.69	136	37 Average
4 @	2462.00	108.24			106.23	32.31	5.40	35.69	136	37 Peak
5 @	2483.50	72.35	-1.65	74.00	70.36	32.30	5.38	35.70	136	37 Peak
6 @	2483.50	52.57	-1.43	54.00	50.58	32.30	5.38	35.70	136	37 Average
7	8910.00	55.44	-18.56	74.00	43.03	38.64	10.31	36.54	100	80 Peak
8	8910.00	47.51	-26.49	74.00	35.10	38.64	10.31	36.54	100	80 Peak
9	9849.00	39.19	-34.81	74.00	74.69	-9.63	10.90	36.77	100	217 Peak



Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR.912101

Power : Real Battery (4.18Vdc)

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2382.00	50.27	-23.73	74.00	48.17	32.30	5.47	35.68	117	307 Peak
2	2382.00	37.86	-16.14	54.00	35.76	32.30	5.47	35.68	117	307 Average
3 @	2462.00	101.46			99.45	32.30	5.40	35.70	117	307 Peak
4 @	2462.00	91.73			89.72	32.30	5.40	35.69	117	307 Average
5	2483.50	58.11	-15.89	74.00	56.12	32.30	5.38	35.70	117	307 Peak
6 @	2483.50	39.77	-14.23	54.00	37.78	32.30	5.38	35.70	117	307 Average
7	8577.00	53.48	-20.52	74.00	42.27	37.35	10.21	36.35	100	51 Peak
8 @	8577.00	45.52	-8.48	54.00	34.31	37.35	10.21	36.35	100	51 Average
9	9849.00	40.93	-33.07	74.00	76.44	-9.63	10.90	36.77	100	22 Peak

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna with I-PEX connector and it is considered to meet antenna requirement.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
EMI Receiver	R&S	ESCS 30	100356	9kHz~2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz~1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9kHz~30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1G~18GHz	Aug. 13, 2008	Aug. 12, 2009	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1G~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10~1000MHz. 32dB.GAIN	Mar. 31, 2008	Mar. 30, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	66584	1G~18GHz	Aug. 06, 2008	Aug. 05, 2009	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15G~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
Combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
Combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	± 0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	± 1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	± 0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty $U_c(y)$	2.36				
Measuring uncertainty for a level of confidence of 95% $U = 2U_c(y)$	4.72				

6 Certification of TAF Accreditation



Certificate No. : L1190-081212

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 12, 2008

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Appendix A. Photographs of EUT

Please refer to Sporton report number EP912101 as below.